

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum plated ~~steel~~ pipe parts by STAF method)
IT 1314-13-2, Zinc oxide, uses 7429-90-5, Aluminum, uses 11114-60-6
11116-16-8, Titanium nitride 11122-26-2 12705-37-2, Chromium nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(aluminum plated ~~steel~~ pipe parts by STAF method)

L12 ANSWER 26 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:903363 CAPLUS Full-text

DOCUMENT NUMBER: 170:588989

TITLE: Piercer plug made of seamless ~~steel~~, and its manufacturing method

INVENTOR(S): Hidaka, Yasuyoshi; Shirasawa, Naoya; Miyai, Tatsuya

PATENT ASSIGNEE(S): Nippon Steel Corporation, Japan

SOURCE: PCT Int. Appl., 27pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019087510	A1	20190509	WO 2018-JP29879	20180809
CN 111315906	A	20200619	CN 2018-80071094	20180809
BR 112020002943	A2	20200811	BR 2020-112020002943	20180809
EP 3705591	A1	20200909	EP 2018-874192	20180809
US 20200263282	A1	20200820	US 2020-16646739	20200312
PRIORITY APPLN. INFO.:			JP 2017-212753	A 20171102
			WO 2018-JP29879	W 20180809

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The piercer plug comprises the following component in mass (%): 0.15-0.3 of carbon, 0.4-1.2 of silicon, 0.2-1.5 of manganese, 0.1-2 of nickel, 0-4 each of molybdenum and tungsten, 1-4 of chromium, 0-0.2 of boron, 0-1 of niobium, 0-1 of vanadium, 0-1 of titanium, and iron being balance and impurities. The piercer plug further comprises a tip section and a body section made of the same material; wherein the body section includes a cylindrical unit which is a hole for attaching a bar and the tip section is harder than the cylindrical unit. The manufg. method of piercer plug comprises a protective film forming on the surface of the piercer plug to the heating, wherein the protective film is a thermal sprayed coating and a buildup layer. According to the present invention, it is possible to provide a highly recyclable piercer plug.

IT 2315454-12-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(piercer plug made of seamless ~~steel~~, and its manufg. method)

RN 2315454-12-5 CAPLUS

CN Iron alloy, base, Fe 82-97, Cr 1-4, Mo 0-4, W 0-4, Ni 0.1-2, Mn 0.2-1.5, Si 0.4-1.2, Nb 0-1, Ti 0-1, V 0-1, C 0.2-0.3, B 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	82 - 97	7439-89-6
Cr	1 - 4	7440-47-3
Mo	0 - 4	7439-98-7
W	0 - 4	7440-33-7
Ni	0.1 - 2	7440-02-0
Mn	0.2 - 1.5	7439-96-5
Si	0.4 - 1.2	7440-21-3
Nb	0 - 1	7440-03-1
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
C	0.2 - 0.3	7440-44-0
B	0 - 0.2	7440-42-8

IPCI C22C0038-00 [I]; C21D0009-00 [I]; C22C0038-54 [I]

IPCR C22C0038-00 [I]; C21D0009-00 [I]; C22C0038-54 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST carbon boron seamless ~~steel~~ piercer plug

IT 2315454-12-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(piercer plug made of seamless steel, and its manufg. method)

L12 ANSWER 27 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2019:807393 CAPLUS Full-text
DOCUMENT NUMBER: 170:538936
TITLE: Manufacture of steel components having a metal coating protecting it against corrosion
INVENTOR(S): Banik, Janko; Koeyer, Maria; Rosenstock, Dirk; Ruthenberg, Manuela
PATENT ASSIGNEE(S): Thyssenkrupp Steel Europe AG, Germany; Thyssenkrupp AG
SOURCE: PCT Int. Appl., 26pp.; Chemical Indexing Equivalent to 170:538935 (DE)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019076720	A1	20190425	WO 2018-EP77692	20181011
DE 102017218704	A1	20190425	DE 2017-102017218704	20171019
CN 110997951	A	20200410	CN 2018-80049166	20181011
EP 3697936	A1	20200826	EP 2018-804228	20181011
US 20200216925	A1	20200709	US 2020-16647894	20200317
PRIORITY APPLN. INFO.:			DE 2017-102017218704 A	20171019
			WO 2018-EP77692 W	20181011

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB A method for producing a steel component comprising a steel substrate and an aluminum alloy-based anti-corrosion coating, is described for use in the automotive sector.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
BANIK JANKO	2016			EP 2993248 A1	CAPLUS
COBO SEBASTIAN	2017			US 20170253941 A1	
KUSUMI K	2007			EP 1767286 A1	CAPLUS
MAKI JUN	2014			EP 2695963 A1	CAPLUS
ROSENSTOCK DIRK	2018			WO 2018234102 A1	CAPLUS

IT 2307271-66-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; manuf. of steel components having a metal coating protecting it against corrosion)

RN 2307271-66-3 CAPLUS
CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C21D0001-76 [I]; B21D0022-02 [I]; B21D0022-20 [I]; C21D0007-13 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C23C0002-28 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C21D0001-673 [I]
IPCR C21D0001-76 [I]; B21D0022-02 [I]; B21D0022-20 [I]; C21D0001-673 [I]; C21D0007-13 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C23C0002-28 [I]

CC 55-10 (Ferrous Metals and Alloys)
 Section cross-reference(s): 56
 ST ~~steel~~ metal prevention corrosion coating
 IT Automobile bodies
 (chassis; manuf. of ~~steel~~ components having a metal coating
 protecting it against corrosion)
 IT Anticorrosive coating materials
 Automobile bodies
 Automotive bumpers
 (manuf. of ~~steel~~ components having a metal coating protecting
 it against corrosion)
 IT 1273096-81-3P, Aluminum alloy 2307271-67-4P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (anti-corrosion coatings; manuf. of ~~steel~~ components having a
 metal coating protecting it against corrosion)
 IT 1333-74-0, Hydrogen, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (in ~~steel~~; manuf. of ~~steel~~ components having a
 metal coating protecting it against corrosion)
 IT 12597-69-2P, ~~Steel~~, preparation 2307271-66-3P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (strips; manuf. of ~~steel~~ components having a metal coating
 protecting it against corrosion)

L12 ANSWER 28 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2019:805627 CAPLUS Full-text
 DOCUMENT NUMBER: 170:527030
 TITLE: Enamelling of high-strength ~~steels~~
 INVENTOR(S): Myslowicki, Stefan
 PATENT ASSIGNEE(S): ThyssenKrupp Steel Europe AG, Germany; ThyssenKrupp AG
 SOURCE: PCT Int. Appl., 28pp.; Chemical Indexing Equivalent to
 170:527029 (DE)
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019076717	A1	20190425	WO 2018-EP77686	20181011
DE 102017218434	A1	20190418	DE 2017-102017218434	20171016
EP 3697545	A1	20200826	EP 2018-786281	20181011
PRIORITY APPLN. INFO.:			DE 2017-102017218434 A	20171016
			WO 2018-EP77686	W 20181011

AB A shaped part having at least two layers, comprises at least one layer
 made of high-strength ~~steel~~ with a tensile strength ≥ 500 MPa and
 a hardness ≥ 160 HV, and at least one layer made of a ~~steel~~ that
 has an enamel layer on the outer side. The shaped part are suitable for
 producing pipelines, pressure vessels, reactors or in app. engineering, in
 particular for the transport of aq. and/or corrosive media.
 IT 2306234-82-0P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (enamelling of high-strength ~~steels~~)
 RN 2306234-82-0 CAPLUS
 CN Iron alloy, base, Fe 85-99, Mn 0.5-3, Al 0-3, Si 0.1-2.5, P 0-1.5, Cr 0-1, Mo
 0-1, V 0-1, Ti 0-0.8, Nb 0-0.5, C 0-0.4, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	85 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Al	0 - 3	7429-90-5
Si	0.1 - 2.5	7440-21-3
P	0 - 1.5	7723-14-0
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2

Ti	0	-	0.8	7440-32-6
Nb	0	-	0.5	7440-03-1
C	0	-	0.4	7440-44-0
B	0	-	0.1	7440-42-8
S	0	-	0.1	7704-34-9

IPCI B21B0001-38 [I]; C21D0008-02 [I]; C21D0009-46 [I]; C22C0038-02 [I];
C23D0005-00 [I]

IPCR B21B0001-38 [I]; C21D0008-02 [I]; C21D0009-46 [I]; C22C0038-02 [I];
C23D0005-00 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 57

ST enamel strength ~~steel~~ bilayer

IT Enameling

Enamels (vitreous)

Pipelines

Pressure vessels

Reactors

(enamelling of high-strength ~~steels~~)

IT 2306234-83-1P, preparation

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(enameled; enamelling of high-strength ~~steels~~)

IT 12597-69-2P, ~~Steel~~, preparation 59816-66-9P, preparation

~~2306234-82-0P~~

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(enamelling of high-strength ~~steels~~)

L12 ANSWER 29 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:802752 CAPLUS Full-text

DOCUMENT NUMBER: 170:538935

TITLE: Manufacture of ~~steel~~ components having a metal coating protecting it against corrosion

INVENTOR(S): Banik, Janko; Koeyer, Maria; Rosenstock, Dirk; Ruthenberg, Manuela

PATENT ASSIGNEE(S): Thyssenkrupp AG, Germany; Thyssenkrupp Steel Europe AG

SOURCE: Ger. Offen., 17pp.; Chemical Indexing Equivalent to 170:538936 (WO)

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017218704	A1	20190425	DE 2017-102017218704	20171019
WO 2019076720	A1	20190425	WO 2018-EP77692	20181011
CN 110997951	A	20200410	CN 2018-80049166	20181011
EP 3697936	A1	20200826	EP 2018-804228	20181011
US 20200216925	A1	20200709	US 2020-16647894	20200317
PRIORITY APPLN. INFO.:			DE 2017-102017218704 A	20171019
			WO 2018-EP77692	W 20181011

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A method for producing a ~~steel~~ component comprising a ~~steel~~ substrate and an aluminum alloy-based anti-corrosion coating, is described for use in the automotive sector.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				EP 1767286 A1	CAPLUS
Anon				US 20120085467 A1	CAPLUS
Anon				EP 2377965 A2	CAPLUS
Anon				EP 2993248 A1	CAPLUS

IT ~~2307271-66-3P~~

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(strips; manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)

RN 2307271-66-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C22C0038-04 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C21D0001-673 [I]
IPCR C22C0038-04 [I]; C21D0001-673 [I]; C23C0002-12 [I]; C23C0002-26 [I]
CC 55-10 (Ferrous Metals and Alloys)
Section cross-reference(s): 56
ST ~~steel~~ metal prevention corrosion coating
IT Automobile bodies
(chassis; manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)
IT Anticorrosive coating materials
Automobile bodies
Automotive bumpers
(manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)
IT 1273096-81-3P, Aluminum alloy 2307271-67-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(anti-corrosion coatings; manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)
IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in ~~steel~~; manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)
IT 12597-69-2P, ~~Steel~~, preparation 2307271-66-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; manuf. of ~~steel~~ components having a metal coating protecting it against corrosion)

L12 ANSWER 30 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2019:746016 CAPLUS Full-text
DOCUMENT NUMBER: 170:527029
TITLE: Enamelling of high-strength ~~steels~~
INVENTOR(S): Myslowicki, Stefan
PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG
SOURCE: Ger. Offen., 20pp.; Chemical Indexing Equivalent to 170:527030 (WO)
CODEN: GWXXBX

DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017218434	A1	20190418	DE 2017-102017218434	20171016
WO 2019076717	A1	20190425	WO 2018-EP77686	20181011
EP 3697545	A1	20200826	EP 2018-786281	20181011
PRIORITY APPLN. INFO.:			DE 2017-102017218434 A	20171016
			WO 2018-EP77686 W	20181011

AB A shaped part having at least two layers, comprises at least one layer made of high-strength ~~steel~~ with a tensile strength ≥ 500 MPa and a hardness ≥ 160 HV, and at least one layer made of a ~~steel~~ that has an enamel layer on the outer side. The shaped part are suitable for producing pipelines, pressure vessels, reactors or in app. engineering, in particular for the transport of aq. and/or corrosive media.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				DE 102008022709 A1	CAPLUS
Anon				DE 1533303 C2	
Anon				EP 2227574 B1	CAPLUS
IT 2306234-82-0P					
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)					
(enamelling of high-strength steels)					
RN	2306234-82-0			CAPLUS	
CN	Iron alloy, base, Fe 85-99, Mn 0.5-3, Al 0-3, Si 0.1-2.5, P 0-1.5, Cr 0-1, Mo 0-1, V 0-1, Ti 0-0.8, Nb 0-0.5, C 0-0.4, B 0-0.1, S 0-0.1 (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
Fe	85 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Al	0 - 3	7429-90-5
Si	0.1 - 2.5	7440-21-3
P	0 - 1.5	7723-14-0
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
Ti	0 - 0.8	7440-32-6
Nb	0 - 0.5	7440-03-1
C	0 - 0.4	7440-44-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI C23D0005-00 [I]; B23K0020-04 [I]

IPCR C23D0005-00 [I]; B23K0020-04 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 57

ST enamel strength steel bilayer

IT Enameling

Enamels (vitreous)

Pipelines

Pressure vessels

Reactors

(enamelling of high-strength steels)

IT 2306234-83-1P, preparation

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(enameled; enamelling of high-strength steels)

IT 12597-69-2P, Steel, preparation 59816-66-9P, preparation

2306234-82-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(enamelling of high-strength steels)

L12 ANSWER 31 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:570060 CAPLUS Full-text

DOCUMENT NUMBER: 170:493791

TITLE: Method for manufacturing hot stamped parts with aluminum-silicon alloy coating and hot stamped parts

INVENTOR(S): Tan, Ning; Fu, Jiang; Hong, Jiyao; Fang, Xuehua

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 13pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 109518114	A	20190326	CN 2018-11035118	20180906
WO 2020030200	A1	20200213	WO 2019-CN104708	20190906
EP 3770295	A1	20210127	EP 2019-847997	20190906

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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PRIORITY APPLN. INFO.:

CN 2018-10896744 A 20180808
CN 2018-11035118 A 20180906
WO 2019-CN104708 W 20190906

AB The title method comprises the following steps of: processing ~~steel~~ plate coated with aluminum-silicon alloy coating to form a blank of a desired shape of the part, heat treating the blank, and hot stamping. The blank heat treatment adopts two-stage or three-stage heating and heat preservation, and the heating and heat preservation are stepwise heating. The ~~steel~~ plate coated with aluminum-silicon alloy coating include a substrate and an aluminum-silicon alloy coating on at least one surface thereof. The method fully considers the characteristics of the aluminum-silicon coating, is able to effectively solve the problem of roll banding of the aluminum-silicon coating, reduces the nodulation probability of the roller of the heat treatment furnace, improves the service life of the roller, and ensures the integrity of the coating of the hot stamped part as well as the mech. property, welding property, coating property and corrosion resisting property of the part.

IT 2305367-85-3P, Aluminum 0-0.3, boron 0-0.1, carbon 0.04-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1.2, sulfur 0-0.1, titanium 0-0.5, iron bal.
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for manufg. hot stamped parts with aluminum-silicon alloy coating and hot stamped parts)

RN 2305367-85-3 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1.2, C 0-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1.2	7440-21-3
C	0 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI C23C0002-12; C23C0002-40; C22C0038-02; C22C0038-04; C22C0038-06; C22C0038-28; C22C0038-32; C22C0038-38; C21D0001-26; C21D0008-00; B21D0022-02

IPCR C23C0002-12 [I]; B21D0022-02 [I]; C21D0001-26 [I]; C21D0008-00 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-28 [I]; C22C0038-32 [I]; C22C0038-38 [I]; C23C0002-40 [I]

CC 56-11 (Nonferrous Metals and Alloys)

ST hot stamping ~~steel~~ aluminum silicon coating

IT 2305367-85-3P, Aluminum 0-0.3, boron 0-0.1, carbon 0.04-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1.2, sulfur 0-0.1, titanium 0-0.5, iron bal. 2305367-88-6P, Iron 0-4, silicon 4-14, aluminum bal.
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for manufg. hot stamped parts with aluminum-silicon alloy coating and hot stamped parts)

L12 ANSWER 32 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:410880 CAPLUS Full-text
DOCUMENT NUMBER: 170:369087
TITLE: Austenitic abrasion resistant ~~steel~~ sheet
INVENTOR(S): Fujioka, Masaaki; Namekawa, Tetsuya; Yoshimura, Masahide; Minagawa, Masaki
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: Jpn. Tokkyo Koho, 22pp.
CODEN: JTXFFF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 6477983	B1	20190306	JP 2018-542295	20180329
WO 2019186906	A1	20191003	WO 2018-JP13281	20180329
KR 2019115094	A	20191010	KR 2019-7027564	20180329
KR 2123604	B1	20200615		
AU 2018412622	A1	20191017	AU 2018-412622	20180329
CN 110546290	A	20191206	CN 2018-80022906	20180329
CN 110546290	B	20200915		
EP 3594374	A1	20200115	EP 2018-909269	20180329
KR 2020029060	A	20200317	KR 2020-7006862	20180329
KR 2206319	B1	20210122		
BR 112019019598	A2	20200414	BR 2019-112019019598	20180329
IN 201917036722	A	20191115	IN 2019-17036722	20190912
PRIORITY APPLN. INFO.:			WO 2018-JP13281	W 20180329
			KR 2019-7027564	A3 20180329

AB The austenite type abrasion-proof ~~steel~~ sheet has specified chem. compn., and the mass% of C and Mn satisfies $-13.75 \times C + 16.5 \leq \text{manganese} \leq -20 \times C + 30$. In the microstructure, the vol. percentage of the austenite is 40-90%, and the mean particle diam. of the austenite is 40-300 μ m.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2011			JP 2011219809 A	CAPLUS
Anon	2012			JP 2012107325 A	CAPLUS
Anon	2015			WO 2015147166 A1	CAPLUS
Anon	2016			JP 2016196703 A	CAPLUS
Anon	2016			JP 2016507648 A	
IT	2257425-86-6, Aluminum 0.001-0.3, boron 0-0.3, carbon 0.2-1.6, chromium 0-5, cobalt 0-3, copper 0-3, iron bal., manganese 2.5-30, molybdenum 0-2, nickel 0-3, niobium 0-0.3, nitrogen 0-1, silicon 0.01-2, tantalum 0-0.3, titanium 0-0.3, tungsten 0-2, vanadium 0-0.3, zirconium 0-0.3 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (austenitic abrasion resistant ~~steel~~ sheet)				
RN	2257425-86-6 CAPLUS				
CN	Iron alloy, base, Fe 45-97, Mn 2.5-30, Cr 0-5, Co 0-3, Cu 0-3, Ni 0-3, Mo 0-2, Si 0-2, W 0-2, C 0.2-1.6, N 0-1, Al 0-0.3, B 0-0.3, Nb 0-0.3, Ta 0-0.3, Ti 0-0.3, V 0-0.3, Zr 0-0.3 (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
Fe	45 - 97	7439-89-6
Mn	2.5 - 30	7439-96-5
Cr	0 - 5	7440-47-3
Co	0 - 3	7440-48-4
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Mo	0 - 2	7439-98-7
Si	0 - 2	7440-21-3
W	0 - 2	7440-33-7
C	0.2 - 1.6	7440-44-0
N	0 - 1	17778-88-0
Al	0 - 0.3	7429-90-5
B	0 - 0.3	7440-42-8
Nb	0 - 0.3	7440-03-1
Ta	0 - 0.3	7440-25-7
Ti	0 - 0.3	7440-32-6
V	0 - 0.3	7440-62-2
Zr	0 - 0.3	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0008-02 [N]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST austenitic ~~steel~~ sheet abrasion resistance

IT Abrasion resistance

Elongation, mechanical

Microstructure
Sheet materials
Tensile strength
Vickers hardness
Yield strength

(austenitic abrasion resistant steel sheet)

IT 2257425-86-6, Aluminum 0.001-0.3, boron 0-0.3, carbon 0.2-1.6, chromium 0-5, cobalt 0-3, copper 0-3, iron bal., manganese 2.5-30, molybdenum 0-2, nickel 0-3, niobium 0-0.3, nitrogen 0-1, silicon 0.01-2, tantalum 0-0.3, titanium 0-0.3, tungsten 0-2, vanadium 0-0.3, zirconium 0-0.3

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(austenitic abrasion resistant steel sheet)

L12 ANSWER 33 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:340815 CAPLUS Full-text

DOCUMENT NUMBER: 170:379972

TITLE: Hot stamping method of zinc-based coated steel plate or steel strip with excellent corrosion resistance

INVENTOR(S): Bi, Wenzhen; Hong, Jiyao; Wang, Li

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 7pp.; Chemical Indexing

Equivalent to 173:85818 (WO)

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 109365606	A	20190222	CN 2018-11453322	20181130
WO 2020108593	A1	20200604	WO 2019-CN121859	20191129
PRIORITY APPLN. INFO.:			CN 2018-11453322	A 20181130

AB The invention discloses a hot stamping method of zinc-based coated steel plate or steel strip with excellent corrosion resistance, which improves the corrosion resistance of the steel plate or the steel strip and avoids cracking of the substrate. The above steel plate or steel strip includes the following components in percentage by wt.: C 0.1-0.8%, Si 0.05-2.0%, Mn 0.5-3.0%, P <0.1%, S <0.05%, Al <0.1%, N <0.01%, and balance of Fe and impurities, and also includes at least one of Cr 0.01-1.0%, Mo 0.01-1.0%, Ti <0.2%, Nb 0.01-0.08%, V 0.01-1.0%, and B 0.005-0.08%; the zinc-based coating includes the following components in percentage by wt.: Al 0.15%-6.5%, Mg 0.2-7%, RE <0.2%, Sr 0.002-0.2%, and balance of Zn and impurities, and the coating further includes at least one or more of Mn, Cr, Al, and Mg, and the total amt. thereof is more than 0.1%.

IT 2293976-55-1, Aluminum 0-0.1, boron 0.005-0.1, carbon 0.1-0.8, chromium 0.01-1, iron bal., manganese 0.5-3, molybdenum 0.01-1, niobium 0.01-0.1, phosphorus 0-0.1, silicon 0.05-2, titanium 0-0.2, vanadium 0.01-1

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);

TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(Hot stamping method of zinc-based coated steel plate or steel strip with excellent corrosion resistance)

RN 2293976-55-1 CAPLUS

CN Iron alloy, base, Fe 91-99, Mn 0.5-3, Si 0-2, Cr 0-1, Mo 0-1, V 0-1, C 0.1-0.8, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5

B	0	-	0.1	7440-42-8
Nb	0	-	0.1	7440-03-1
P	0	-	0.1	7723-14-0

IPCI B21D0022-02; C23C0002-06; C23C0002-40; C22C0018-00; C21D0008-02
 IPCR B21D0022-02 [I]; C21D0008-02 [I]; C22C0018-00 [I]; C23C0002-06 [I];
 C23C0002-40 [I]
 CC 55-6 (Ferrous Metals and Alloys)
 ST corrosion resistance zinc alloy coating ~~steel~~ hot stamping
 IT Anticorrosive coating materials
 (Hot stamping method of zinc-based coated ~~steel~~ plate or
~~steel~~ strip with excellent corrosion resistance)
 IT Metalworking
 (stamping, hot; Hot stamping method of zinc-based coated ~~steel~~
 plate or ~~steel~~ strip with excellent corrosion resistance)
 IT 2293976-55-1, Aluminum 0-0.1, boron 0.005-0.1, carbon 0.1-0.8,
 chromium 0.01-1, iron bal., manganese 0.5-3, molybdenum 0.01-1, niobium
 0.01-0.1, phosphorus 0-0.1, silicon 0.05-2, titanium 0-0.2, vanadium
 0.01-1
 RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
 TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated ~~steel~~ plate or
~~steel~~ strip with excellent corrosion resistance)
 IT 2226545-76-0
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated ~~steel~~ plate or
~~steel~~ strip with excellent corrosion resistance)
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L12 ANSWER 34 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2019:269683 CAPLUS Full-text
 DOCUMENT NUMBER: 170:345639
 TITLE: 20CrNiB ~~steel~~ for carburized gear
 INVENTOR(S): Sun, Hongping; Cao, Hongfu; Huang, Zhen; Xu, Xiaohong;
 Lu, Mingxia; Dou, Shengtao; Yang, Gaocheng; Zhang,
 Xuecheng
 PATENT ASSIGNEE(S): Jiangyin Xingcheng Special Steel Works Co., Ltd.,
 Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing, 7pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 109321712	A	20190212	CN 2018-11322890	20181108
PRIORITY APPLN. INFO.:			CN 2018-11322890	20181108

AB A 20CrNiB ~~steel~~ for carburized gear has the advantages of high
 hardenability, high strength and toughness, and stability. The 20CrNiB
~~steel~~ for the carburized gear includes the following raw materials by
 mass percentages: C: 0.17-0.23%, Si: < 0.35%, Mn: 0.50-0.95%, Cr:
 0.85-1.25%, S: 0.015-0.030%, P :≤ 0.025%, Ni: 0.15-0.25%, Nb:
 0.015-0.035%, B: 0.0010-0.0030%, Cu: < 0.20%, Al: 0.010-0.050%, Ca:
 ≤ 0.0005%, and balance of Fe.
 IT 12742-15-3, 20CrNiB
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (20CrNiB ~~steel~~ for carburized gear)
 RN 12742-15-3 CAPLUS
 CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0

Cr	0.70	-	1.10	7440-47-3
Mn	0.60	-	0.90	7439-96-5
Si	0.17	-	0.37	7440-21-3
Cu	0	-	0.30	7440-50-8
C	0.16	-	0.23	7440-44-0
W	0	-	0.20	7440-33-7
Mo	0	-	0.15	7439-98-7
V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

IPCI C21C0007-06; C21C0007-10; C21D0008-06; C22C0033-04; C22C0038-02;
C22C0038-04; C22C0038-06; C22C0038-42; C22C0038-48; C22C0038-54

IPCR C21C0007-06 [I]; C21C0007-10 [I]; C21D0008-06 [I]; C22C0033-04 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-42 [I];
C22C0038-48 [I]; C22C0038-54 [I]

CC 55-7 (Ferrous Metals and Alloys)

ST high hardenability carburization gear 20CrNiB steel

IT Carburizing

Gears

(20CrNiB steel for carburized gear)

IT 12742-15-3, 20CrNiB

RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)

(20CrNiB steel for carburized gear)

L12 ANSWER 35 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:186187 CAPLUS Full-text

DOCUMENT NUMBER: 170:322160

TITLE: Alloy steel material with high-temperature oxidation
resistance

INVENTOR(S): Duanmu, Shundi

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 5pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 109280856	A	20190129	CN 2017-10636887	20170720
PRIORITY APPLN. INFO.:			CN 2017-10636887	20170720

AB The title alloy steel material comprises (by wt.%): nickel 0.30-0.50,
manganese 0.80-1.40, silicon 0.20-0.34, carbon 0.14-0.18, boron 0.02-0.06,
phosphorus 0.01-0.02, sulfur 0.015-0.025, chromium 0.08-0.1, vanadium
0.06-0.2, copper 0.2-0.3, molybdenum 0.02-0.08, titanium 0.08-0.1, niobium
0.02-0.04, rubidium 0.06-0.2, thorium 0.08-0.1, lanthanum and germanium
0.06-0.1, and iron as balance, wherein the content of germanium is 2-4
times of that of lanthanum. The alloy steel material has excellent
high-temp. oxidn. resistance, can be used for manufg. workpiece with high
high-temp. oxidn. resistance, and the high-temp. oxidn. resistance of the
alloy steel material is related to the content ratio of germanium and
lanthanum in the alloy steel.

IT 1960401-15-3, Boron 0.02-0.1, carbon 0.1-0.2, chromium 0.1,
copper 0.2-0.3, iron bal., lanthanum 0-0.1, germanium 0-0.1, manganese
0.8-1.4, molybdenum 0.02-0.1, nickel 0.3-0.5, rubidium 0.1-0.2, silicon
0.2-0.3, titanium 0.1, thorium 0.1, vanadium 0.1-0.2

RL: TEM (Technical or engineered material use); USES (Uses)

(alloy steel material with high-temp. oxidn. resistance)

RN 1960401-15-3 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 0.8-1.4, Ni 0.3-0.5, Cu 0.2-0.3, Si 0.2-0.3, C
0.1-0.2, Rb 0.1-0.2, V 0.1-0.2, Cr 0.1, Th 0.1, Ti 0.1, B 0-0.1, Ge 0-0.1, La
0-0.1, Mo 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Fe	96 - 98	7439-89-6

Mn	0.8	-	1.4	7439-96-5
Ni	0.3	-	0.5	7440-02-0
Cu	0.2	-	0.3	7440-50-8
Si	0.2	-	0.3	7440-21-3
C	0.1	-	0.2	7440-44-0
Rb	0.1	-	0.2	7440-17-7
V	0.1	-	0.2	7440-62-2
Cr		0.1		7440-47-3
Th		0.1		7440-29-1
Ti		0.1		7440-32-6
B	0	-	0.1	7440-42-8
Ge	0	-	0.1	7440-56-4
La	0	-	0.1	7439-91-0
Mo	0	-	0.1	7439-98-7

IPCI C22C0038-04; C22C0038-02; C22C0038-54; C22C0038-46; C22C0038-42;
C22C0038-44; C22C0038-48; C22C0038-50

IPCR C22C0038-04 [I]; C22C0038-02 [I]; C22C0038-42 [I]; C22C0038-44 [I];
C22C0038-46 [I]; C22C0038-48 [I]; C22C0038-50 [I]; C22C0038-54 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST germanium lanthanum ~~steel~~ oxidn resistance

IT ~~1960401-15-3~~, Boron 0.02-0.1, carbon 0.1-0.2, chromium 0.1,
copper 0.2-0.3, iron bal., lanthanum 0-0.1, germanium 0-0.1, manganese
0.8-1.4, molybdenum 0.02-0.1, nickel 0.3-0.5, rubidium 0.1-0.2, silicon
0.2-0.3, titanium 0.1, thorium 0.1, vanadium 0.1-0.2

RL: TEM (Technical or engineered material use); USES (Uses)
(alloy ~~steel~~ material with high-temp. oxidn. resistance)

L12 ANSWER 36 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2601319 CAPLUS Full-text

DOCUMENT NUMBER: 170:116258

TITLE: Method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating

INVENTOR(S): Rosenstock, Dirk; Banik, Janko

PATENT ASSIGNEE(S): ThyssenKrupp Steel Europe AG, Germany; ThyssenKrupp AG

SOURCE: PCT Int. Appl., 25pp.; Chemical Indexing Equivalent to
170:116256 (DE)

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018234102	A1	20181227	WO 2018-EP65498	20180612
DE 102017210201	A1	20181220	DE 2017-102017210201	20170619
EP 3642371	A1	20200429	EP 2018-738199	20180612

PRIORITY APPLN. INFO.: DE 2017-102017210201 A 20170619
WO 2018-EP65498 W 20180612

AB A method is described for producing a corrosion-resistant ~~steel~~
automotive component comprising a substrate and an anticorrosive coating.

IT ~~2254829-63-3P~~

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)

(strips; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)

RN 2254829-63-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti
0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8

Nb 0 - 0.1 7440-03-1
P 0 - 0.1 7723-14-0

IPCI C21D0008-02 [I]; C23C0002-12 [I]; C21D0009-46 [I]; C21D0001-673 [I];
B32B0015-01 [I]
IPCR C21D0008-02 [I]; B32B0015-01 [I]; C21D0001-673 [I]; C21D0009-46 [I];
C23C0002-12 [I]
CC 55-10 (Ferrous Metals and Alloys)
Section cross-reference(s): 56
ST ~~steel~~ automobile metal coating corrosion aluminum alloy
IT Anticorrosive coating materials
(metallic; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)
IT Automobile bodies
Automobile doors
Automobile roofs
Automotive bumpers
Heat treatment
(method for producing a ~~steel~~ automotive component provided
with an aluminum alloy anti-corrosion coating)
IT 254455-65-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(coatings; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)
IT 870820-47-6P, 22MnB5 ~~2254829-63-3P~~
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(strips; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 37 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:2596372 CAPLUS Full-text
DOCUMENT NUMBER: 170:106297
TITLE: High-strength ~~steel~~ sheet and its manufacture for
automobile parts
INVENTOR(S): Natsumeda, Hirokazu; Murakami, Toshio; Saito, Kenji;
Murata, Tadao
PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 23pp.; Chemical Indexing
Equivalent to 170:68139 (WO)
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018204058	A	20181227	JP 2017-108340	20170531
WO 2018221307	A1	20181206	WO 2018-JP19594	20180522
KR 2020003010	A	20200108	KR 2019-7034838	20180522
CN 110678569	A	20200110	CN 2018-80035460	20180522
EP 3636788	A1	20200415	EP 2018-809088	20180522
IN 201947048601	A	20191206	IN 2019-47048601	20191127
US 20200190619	A1	20200618	US 2019-16617736	20191127
PRIORITY APPLN. INFO.:			JP 2017-108340 A	20170531
			WO 2018-JP19594 W	20180522

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The high-strength ~~steel~~ sheet comprises the following compn. in mass%:
carbon of 0.15-0.35, silicon of 0.5-3, aluminum of 0.01, nitrogen of
0-0.01, manganese of 1-4, phosphorus of 0-0.05, sulfur of 0-0.01, and
remaining made up of iron and unavoidable impurities. The ~~steel~~
structure having a ferrite fraction of 0-5%, the total fraction of
tempered martensite and bainite is 60% or more, the amt. of retained
austenite is 10% or more, the av. size of martensite and austenite(MA) is
0-1 μ m and retained austenite is 0-1 μ m, wherein the retained
austenite having a size of 1.5 μ m or more is 2% or more of the total
retained austenite amt., and a solid soln. nitrogen content of 0-0.002
mass%.

IT 2253797-76-9P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength ~~steel~~ sheet and its manuf. for automobile parts)
RN 2253797-76-9 CAPLUS
CN Iron alloy, base, Fe 84-99, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.2-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zn 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	84 - 99	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.2 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zn	0 - 0.2	7440-66-6

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-48 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST high strength ~~steel~~ sheet manuf automobile part

IT Annealing
Automobile parts
Cold rolling
Elongation, mechanical
Heat treatment
Hot rolling
Microstructure
Sheet materials
Tensile strength
Yield strength
(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

IT 2253797-76-9P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

L12 ANSWER 38 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2596261 CAPLUS Full-text

DOCUMENT NUMBER: 170:127894

TITLE: Wear-resistant thick ~~steel~~ sheet

INVENTOR(S): Fujioka, Masaaki; Namekawa, Tetsuya; Yoshimura, Masahide; Minagawa, Masaki; Hoshino, Manabu; Sawamura, Mitsuru

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018204109	A	20181227	JP 2018-110217	20180608

PRIORITY APPLN. INFO.: JP 2017-113421 A 20170608

AB The title wear-resistant thick ~~steel~~ sheet is excellent in both abrasion ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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resistance and toughness. The ~~steel~~ sheet comprises (by mass%): carbon 0.2-1.6, silicon 0.01-2, manganese 2.5-30, aluminum 0.001-0.3, phosphorus 0-0.05, sulfur 0-0.05, and iron and impurities as bal., wherein the content (mass%) of carbon and manganese satisfies $(-13.75)C + 16.5 \leq Mn \leq (-20)C + 35$.

IT 2257425-86-6
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(wear-resistant thick ~~steel~~ sheet)
RN 2257425-86-6 CAPLUS
CN Iron alloy, base, Fe 45-97, Mn 2.5-30, Cr 0-5, Co 0-3, Cu 0-3, Ni 0-3, Mo 0-2, Si 0-2, W 0-2, C 0.2-1.6, N 0-1, Al 0-0.3, B 0-0.3, Nb 0-0.3, Ta 0-0.3, Ti 0-0.3, V 0-0.3, Zr 0-0.3 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	45 - 97	7439-89-6
Mn	2.5 - 30	7439-96-5
Cr	0 - 5	7440-47-3
Co	0 - 3	7440-48-4
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Mo	0 - 2	7439-98-7
Si	0 - 2	7440-21-3
W	0 - 2	7440-33-7
C	0.2 - 1.6	7440-44-0
N	0 - 1	17778-88-0
Al	0 - 0.3	7429-90-5
B	0 - 0.3	7440-42-8
Nb	0 - 0.3	7440-03-1
Ta	0 - 0.3	7440-25-7
Ti	0 - 0.3	7440-32-6
V	0 - 0.3	7440-62-2
Zr	0 - 0.3	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0008-02 [I]
IPCR C22C0038-00 [I]; C21D0008-02 [I]; C22C0038-60 [I]
CC 55-1 (Ferrous Metals and Alloys)
ST wear resistant ~~steel~~ sheet
IT Wear-resistant materials
(wear-resistant thick ~~steel~~ sheet)
IT 12244-31-4, Austenite, formation (nonpreparative)
RL: FMU (Formation, unclassified); OCU (Occurrence, unclassified); FORM (Formation, nonpreparative); OCCU (Occurrence)
(wear-resistant thick ~~steel~~ sheet)
IT 2257425-86-6
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(wear-resistant thick ~~steel~~ sheet)

L12 ANSWER 39 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:2544202 CAPLUS Full-text
DOCUMENT NUMBER: 170:116256
TITLE: Method for producing a ~~steel~~ automotive component provided with an aluminum alloy anti-corrosion coating
INVENTOR(S): Rosenstock, Dirk; Banik, Janko
PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG
SOURCE: Ger. Offen., 16pp.; Chemical Indexing Equivalent to 170:116258 (WO)
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017210201	A1	20181220	DE 2017-102017210201	20170619
CN 109136775	A	20190104	CN 2017-10986828	20171020
WO 2018234102	A1	20181227	WO 2018-EP65498	20180612
EP 3642371	A1	20200429	EP 2018-738199	20180612

PRIORITY APPLN. INFO.:

DE 2017-102017210201 A 20170619

WO 2018-EP65498 W 20180612

AB A method is described for producing a corrosion-resistant ~~steel~~
automotive component comprising a substrate and an anticorrosive coating.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				DE 102007061489 A1	CAPLUS
Anon				DE 102009007909 A1	CAPLUS
Anon				WO 2015036151 A1	CAPLUS
Anon				WO 2016034476 A1	CAPLUS

IT 2254829-63-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(strips; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)

RN 2254829-63-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti
0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C22C0038-04 [I]; C21D0008-02 [I]; C23C0002-12 [I]

IPCR C22C0038-04 [I]; C21D0008-02 [I]; C23C0002-12 [I]

CC 55-10 (Ferrous Metals and Alloys)

Section cross-reference(s): 56

ST ~~steel~~ automobile metal coating corrosion aluminum alloy

IT Anticorrosive coating materials

(metallic; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)

IT Automobile bodies

Automobile doors

Automobile roofs

Automotive bumpers

Heat treatment

(method for producing a ~~steel~~ automotive component provided
with an aluminum alloy anti-corrosion coating)

IT 254455-65-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)

(coatings; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)

IT 870820-47-6P, 22MnB5 2254829-63-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)

(strips; method for producing a ~~steel~~ automotive component
provided with an aluminum alloy anti-corrosion coating)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 40 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2476841 CAPLUS Full-text

DOCUMENT NUMBER: 170:49883

TITLE: High-strength ~~steel~~ sheet comprising silicon and
manganese, and production method for same

INVENTOR(S): Natsumeda, Hirokazu; Murakami, Toshio; Saito, Kenji;
Murata, Tadao

PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 23pp.; Chemical Indexing
Equivalent to 170:35129 (WO)
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018197380	A	20181213	JP 2017-103024	20170524
WO 2018216522	A1	20181129	WO 2018-JP18489	20180514
KR 2019142354	A	20191226	KR 2019-7033765	20180514
CN 110651062	A	20200103	CN 2018-80033477	20180514
EP 3633058	A1	20200408	EP 2018-806482	20180514
IN 201947047461	A	20191129	IN 2019-47047461	20191121
US 20200071787	A1	20200305	US 2019-16615462	20191121
PRIORITY APPLN. INFO.:			JP 2017-103024	A 20170524
			WO 2018-JP18489	W 20180514

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The high-strength ~~steel~~ sheet comprises the following compn. by mass %:
carbon of 0.15-0.35, silicon of 0.5-3, aluminum of 0.5-3, manganese of
1-4, phosphorus of 0.05, sulfur of 0.01, titanium of 0.01-0.2, with the
remainder being made up of iron balance and unavoidable impurities. The
~~steel~~ sheet structure is such that the ferrite fraction does not exceed
5, the total fraction of tempered martensite and tempered bainite is at
least 60, the retained austenite fraction is at least 10, the fresh
martensite fraction does not exceed 5, the av. particle size of retained
austenite does not exceed 0.5 µm, retained austenite having a particle
diam. of at least 1.0 µm accounts for at least 2 of total retained
austenite content, and prior austenite particle diam. does not exceed 10
µm.

IT 2252460-30-1
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

RN 2252460-30-1 CAPLUS

CN Iron alloy, base, Fe 88-98, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Ni
0-1, C 0.2-0.4, Hf 0-0.2, Mo 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	88 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Ni	0 - 1	7440-02-0
C	0.2 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-14 [I]; C22C0038-58 [I]; C21D0009-46 [I];
C21D0009-48 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C22C0038-14 [I];
C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST high strength ~~steel~~ sheet

IT Deep drawing of materials
Elongation, mechanical
Grain size
Heat treatment
Impact strength
Microstructure

Rolling (metals)
Tensile strength
Yield strength
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

IT 12173-93-2, Martensite, formation (nonpreparative) 12244-31-4,
Austenite, formation (nonpreparative) 12427-23-5, Bainite 12427-24-6,
Ferrite (ferrous metal component)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

IT 2252460-30-1
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

L12 ANSWER 41 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2421261 CAPLUS Full-text

DOCUMENT NUMBER: 170:106245

TITLE: Ultra-high strength ~~steel~~ having near net shaping
for automobile safety components and preparation
method thereof

INVENTOR(S): Ju, Jia; Wang, Zhangzhong; Zhang, Sibin; Liu, Zhuang;
Zhang, Baosen; Mao, Xiangyang; Ba, Zhixin; Li, Xuan;
Li, Huaguan

PATENT ASSIGNEE(S): Nanjing Institute of Technology, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 9pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 108950411	A	20181207	CN 2018-10840230	20180727
CN 108950411	B	20200519		

PRIORITY APPLN. INFO.: CN 2018-10840230 20180727

AB Raw materials include the following compns. (by wt.%): C 0.15-0.25, Mn
1.3-2.8, P $\leq$ 0.006, S $\leq$ 0.004, Si 0.25-0.85, B 0.001-0.07, Cr
0.20-0.90, Ti 0.07-0.15, Al 0.005-0.02, Nb 0.65-1.40, and Fe as balance.
The prepn. method includes the following steps of S1) formulating; S2)
subjecting to vacuum induction melting, casting to form alloy ingot; S3)
thermally treating; and S4) pressure processing. The product has the
advantages of relatively excellent mech. property and near-net forming.

IT 2254705-29-6, Boron 0-0.1, Carbon 0.2, chromium 0.2-0.9, iron
94-97, manganese 1.3-2.8, niobium 0.6-1.4, silicon 0.2-0.8, titanium
0.1-0.2

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PREP (Preparation);
PROC (Process); USES (Uses)

(ultra-high strength ~~steel~~ having near net shaping for
automobile safety components and prepn. method thereof)

RN 2254705-29-6 CAPLUS

CN Iron alloy, base, Fe 94-97, Mn 1.3-2.8, Nb 0.6-1.4, Cr 0.2-0.9, Si 0.2-0.8, C
0.2, Ti 0.1-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	94 - 97	7439-89-6
Mn	1.3 - 2.8	7439-96-5
Nb	0.6 - 1.4	7440-03-1
Cr	0.2 - 0.9	7440-47-3
Si	0.2 - 0.8	7440-21-3
C	0.2	7440-44-0
Ti	0.1 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-04; C22C0038-02; C22C0038-32; C22C0038-28; C22C0038-26;
C22C0038-06; C22C0038-38; C22C0033-04; C21D0008-00

IPCR C22C0038-04 [I]; C21D0008-00 [I]; C22C0033-04 [I]; C22C0038-02 [I];
C22C0038-06 [I]; C22C0038-26 [I]; C22C0038-28 [I]; C22C0038-32 [I];
C22C0038-38 [I]
CC 55-1 (Ferrous Metals and Alloys)
Section cross-reference(s): 47
ST ultrahigh strength ~~steel~~ near net shaping automobile safety component
IT Heat treatment
Magnetic stirring
Melting
Pipes and Tubes
(ultra-high strength ~~steel~~ having near net shaping for
automobile safety components and prepn. method thereof)
IT 2254705-29-6P, Boron 0-0.1, Carbon 0.2, chromium 0.2-0.9, iron
94-97, manganese 1.3-2.8, niobium 0.6-1.4, silicon 0.2-0.8, titanium
0.1-0.2
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PREP (Preparation);
PROC (Process); USES (Uses)
(ultra-high strength ~~steel~~ having near net shaping for
automobile safety components and prepn. method thereof)

L12 ANSWER 42 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:2401537 CAPLUS Full-text
DOCUMENT NUMBER: 170:68139
TITLE: High-strength ~~steel~~ sheet and its manufacture for
automobile parts
INVENTOR(S): Natsumeda, Hirokazu; Murakami, Toshio; Saito, Kenji;
Murata, Tadao
PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.),
Japan
SOURCE: PCT Int. Appl., 42pp.; Chemical Indexing Equivalent to
170:106297 (JP)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018221307	A1	20181206	WO 2018-JP19594	20180522
JP 2018204058	A	20181227	JP 2017-108340	20170531
KR 2020003010	A	20200108	KR 2019-7034838	20180522
CN 110678569	A	20200110	CN 2018-80035460	20180522
EP 3636788	A1	20200415	EP 2018-809088	20180522
IN 201947048601	A	20191206	IN 2019-47048601	20191127
US 20200190619	A1	20200618	US 2019-16617736	20191127
PRIORITY APPLN. INFO.:			JP 2017-108340	A 20170531
			WO 2018-JP19594	W 20180522

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB The high-strength ~~steel~~ sheet comprises the following compn. in mass%:
carbon of 0.15-0.35, silicon of 0.5-3, aluminum of 0.01, nitrogen of
0-0.01, manganese of 1-4, phosphorus of 0-0.05, sulfur of 0-0.01, and
remaining made up of iron and unavoidable impurities. The ~~steel~~
structure having a ferrite fraction of 0-5%, the total fraction of
tempered martensite and bainite is 60% or more, the amt. of retained
austenite is 10% or more, the av. size of martensite and austenite(MA) is
0-1 µm and retained austenite is 0-1 µm, wherein the retained
austenite having a size of 1.5 µm or more is 2% or more of the total
retained austenite amt., and a solid soln. nitrogen content of 0-0.002
mass%.

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1991			JP 394017 A	
Anon	2015			JP 2015516511 A	
MURAKAMI TOSHIO	2013			JP 2013040383 A	CAPLUS
MURAKAMI TOSHIO	2017			JP 2017214648 A	CAPLUS
MURATA TADAO	2016			JP 2016194138 A	CAPLUS
NAKAGAITO TATSUYA	2009			JP 2009209450 A	CAPLUS

IT 2253797-76-9P, Aluminum 0-3, boron 0-1, carbon 0.15-0.35,

chromium 0-1, copper 0-1, hafnium 0-0.2, iron bal., manganese 1-4,
molybdenum 0-1, nickel 0-1, niobium 0-0.2, silicon 0-3, titanium 0-0.2,
vanadium 0-0.2, Zn 0-0.2

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(high-strength ~~steel~~ sheet and its manuf. for automobile
parts)

RN 2253797-76-9 CAPLUS

CN Iron alloy, base, Fe 84-99, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Mo
0-1, Ni 0-1, C 0.2-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zn 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	84 - 99	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.2 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zn	0 - 0.2	7440-66-6

IPCI C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-06 [I]; C22C0038-58 [I];
C21D0009-46 [N]

IPCR C22C0038-00 [I]; C21D0009-46 [N]; C21D0009-48 [I]; C22C0038-06 [I];
C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST high strength ~~steel~~ sheet manuf automobile part

IT Annealing

Automobile parts

Cold rolling

Elongation, mechanical

Heat treatment

Hot rolling

Microstructure

Sheet materials

Tensile strength

Yield strength

(high-strength ~~steel~~ sheet and its manuf. for automobile
parts)

IT 2253797-76-9P, Aluminum 0-3, boron 0-1, carbon 0.15-0.35,
chromium 0-1, copper 0-1, hafnium 0-0.2, iron bal., manganese 1-4,
molybdenum 0-1, nickel 0-1, niobium 0-0.2, silicon 0-3, titanium 0-0.2,
vanadium 0-0.2, Zn 0-0.2

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(high-strength ~~steel~~ sheet and its manuf. for automobile
parts)

L12 ANSWER 43 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2338703 CAPLUS Full-text

DOCUMENT NUMBER: 170:35129

TITLE: High-strength ~~steel~~ sheet comprising silicon and
manganese, and production method for same

INVENTOR(S): Natsumeda, Hirokazu; Murakami, Toshio; Saito, Kenji;
Murata, Tadao

PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.),
Japan

SOURCE: PCT Int. Appl., 41pp.; Chemical Indexing Equivalent to
170:49883 (JP)
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018216522	A1	20181129	WO 2018-JP18489	20180514
JP 2018197380	A	20181213	JP 2017-103024	20170524
KR 2019142354	A	20191226	KR 2019-7033765	20180514
CN 110651062	A	20200103	CN 2018-80033477	20180514
EP 3633058	A1	20200408	EP 2018-806482	20180514
IN 201947047461	A	20191129	IN 2019-47047461	20191121
US 20200071787	A1	20200305	US 2019-16615462	20191121

PRIORITY APPLN. INFO.:

JP 2017-103024	A	20170524
WO 2018-JP18489	W	20180514

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The high-strength ~~steel~~ sheet comprises the following compn. by mass %: carbon of 0.15-0.35, silicon of 0.5-3, aluminum of 0.5-3, manganese of 1-4, phosphorus of 0.05, sulfur of 0.01, titanium of 0.01-0.2, with the remainder being made up of iron balance and unavoidable impurities. The ~~steel~~ sheet structure is such that the ferrite fraction does not exceed 5, the total fraction of tempered martensite and tempered bainite is at least 60, the retained austenite fraction is at least 10, the fresh martensite fraction does not exceed 5, the av. particle size of retained austenite does not exceed 0.5 μm , retained austenite having a particle diam. of at least 1.0 μm accounts for at least 2 of total retained austenite content, and prior austenite particle diam. does not exceed 10 μm .

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
KAWATA HIROYUKI	2017			WO 2017164346 A1	CAPLUS
MURAKAMI TOSHIO	2017			JP 2017214648 A	CAPLUS
SANO KOICHI	2017			JP 2017053001 A	CAPLUS
SHIBATA KOSUKE	2015			JP 2015218365 A	CAPLUS

IT 2252460-30-1, Aluminum 0-3, boron 0-1, calcium 0-0.01, carbon 0.15-0.35, chromium 0-1, copper 0-1, hafnium 0-0.2, iron bal., magnesium 0-0.01, manganese 1-4, molybdenum 0-0.2, nickel 0-1, niobium 0-0.2, phosphorus 0-0.05, mis 0-0.01, silicon 0-3, sulfur 0-0.01, titanium 0.01-0.2, vanadium 0-0.2, zirconium 0-0.2
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(high-strength ~~steel~~ sheet comprising silicon and manganese, and prodn. method for same)

RN 2252460-30-1 CAPLUS

CN Iron alloy, base, Fe 88-98, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Ni 0-1, C 0.2-0.4, Hf 0-0.2, Mo 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	88 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Ni	0 - 1	7440-02-0
C	0.2 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-14 [I]; C22C0038-58 [I]

IPCR C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-14 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST high strength ~~steel~~ sheet

IT Deep drawing of materials
Elongation, mechanical
Grain size
Heat treatment
Impact strength
Microstructure
Rolling (metals)
Tensile strength
Yield strength
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

IT 12173-93-2, Martensite, formation (nonpreparative) 12244-31-4,
Austenite, formation (nonpreparative) 12427-23-5, Bainite 12427-24-6,
Ferrite (ferrous metal component)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

IT 2252460-30-1, Aluminum 0-3, boron 0-1, calcium 0-0.01, carbon
0.15-0.35, chromium 0-1, copper 0-1, hafnium 0-0.2, iron bal., magnesium
0-0.01, manganese 1-4, molybdenum 0-0.2, nickel 0-1, niobium 0-0.2,
phosphorus 0-0.05, mis 0-0.01, silicon 0-3, sulfur 0-0.01, titanium
0.01-0.2, vanadium 0-0.2, zirconium 0-0.2
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(high-strength ~~steel~~ sheet comprising silicon and manganese,
and prodn. method for same)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 44 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:2321302 CAPLUS Full-text
DOCUMENT NUMBER: 170:49880
TITLE: ~~Steel~~-based electromagnetic shield multilayer screen
products
INVENTOR(S): Wieschalla, Vanessa; Nierhoff, Daniel; Wolske,
Vanessa; Becker, Jens-Ulrik
PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG
SOURCE: Ger., 17pp.
CODEN: GWXXAW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017216975	B3	20181129	DE 2017-102017216975	20170925
WO 2019057547	A1	20190328	WO 2018-EP74424	20180911
PRIORITY APPLN. INFO.:			DE 2017-102017216975 A	20170925

AB An electromagnetic radiation shielding multilayer material is manufd. for
shielding from electromagnetic radiation, static elec. and/or static
magnetic fields.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				EP 1426982 A1	CAPLUS
Anon				WO 1991012960 A1	
Anon				DE 3710322 A1	CAPLUS

IT 2253656-70-9P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(layers; ~~steel~~-based electromagnetic shield multilayer screen
products)

RN 2253656-70-9 CAPLUS

CN Iron alloy, base, Fe 94-100, Mn 0.1-3, C 0-0.5, Cr 0-0.5, Cu 0-0.5, Si 0-0.5, Ti
0-0.3, Ni 0-0.2, Al 0-0.1, As 0-0.1, B 0-0.1, Mo 0-0.1, N 0-0.1, Nb 0-0.1, P
0-0.1, S 0-0.1, Sn 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====

Fe	94	-	100	7439-89-6
Mn	0.1	-	3	7439-96-5
C	0	-	0.5	7440-44-0
Cr	0	-	0.5	7440-47-3
Cu	0	-	0.5	7440-50-8
Si	0	-	0.5	7440-21-3
Ti	0	-	0.3	7440-32-6
Ni	0	-	0.2	7440-02-0
Al	0	-	0.1	7429-90-5
As	0	-	0.1	7440-38-2
B	0	-	0.1	7440-42-8
Mo	0	-	0.1	7439-98-7
N	0	-	0.1	17778-88-0
Nb	0	-	0.1	7440-03-1
P	0	-	0.1	7723-14-0
S	0	-	0.1	7704-34-9
Sn	0	-	0.1	7440-31-5
V	0	-	0.1	7440-62-2

IPCI C22C0038-02 [I]; H05K0009-00 [I]; C22C0038-04 [I]; C22C0038-18 [I]
 IPCR C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-18 [I]; H05K0009-00 [I]

CC 55-3 (Ferrous Metals and Alloys)

Section cross-reference(s): 73, 76, 77

ST multilayer screen electromagnetic shield stainless steel alloy

IT Electromagnetic shields

Hot rolling

Multilayers

(steel-based electromagnetic shield multilayer screen products)

IT 2253656-70-3P 2253656-71-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(layers; steel-based electromagnetic shield multilayer screen products)

L12 ANSWER 45 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1991052 CAPLUS Full-text

DOCUMENT NUMBER: 169:495435

TITLE: Preparation method of high-strength steel with fatigue stress amplitude of ≥ 400 mpa

INVENTOR(S): Wang, Shisen; Du, Ming; Xu, Jinqiao; Wang, Rong; Li, Defa; Xiong, Fei; He, Yayuan; Yin, Yunyang

PATENT ASSIGNEE(S): Wuhan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 9pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 108707822	A	20181026	CN 2018-10541993	20180530
CN 108707822	B	20200505		

PRIORITY APPLN. INFO.: CN 2018-10541993 20180530

AB The title steel comprises (by wt%) carbon 0.1-0.2, silicon 0.1-0.4, manganese 1.2-1.6, phosphorus+sulfur 0-0.015, chromium 0.1-0.4, molybdenum 0.4-0.8, nickel 0.05-0.2, niobium +titanium+vanadium+boron 0.045-0.1, iron balance. The steel is prepd. by smelting, continuous casting, hot rolling, quenching at 850-920°C, tempering at 380-420°C, and cooling. The steel has higher strength and elongation.

IT 2248486-84-0P, Carbon 0.1-0.2, boron 0-0.1, chromium 0.1-0.4, manganese 1.2-1.6, molybdenum 0.4-0.8, nickel 0.05-0.2, niobium 0-0.1, silicon 0.1-0.4, titanium 0-0.1, vanadium 0-0.1, iron bal.

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use);

PREP (Preparation); PROC (Process); USES (Uses)

(prepn. method of high-strength steel with fatigue stress amplitude of ≥ 400 mpa)

RN 2248486-84-0 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 1.2-1.6, Mo 0.4-0.8, Cr 0.1-0.4, Si 0.1-0.4, C 0.1-0.2, Ni 0-0.2, B 0-0.1, Nb 0-0.1, Ti 0-0.1, V 0-0.1 (CA INDEX NAME)

ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1202 of 1430

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	96 - 98	7439-89-6
Mn	1.2 - 1.6	7439-96-5
Mo	0.4 - 0.8	7439-98-7
Cr	0.1 - 0.4	7440-47-3
Si	0.1 - 0.4	7440-21-3
C	0.1 - 0.2	7440-44-0
Ni	0 - 0.2	7440-02-0
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
Ti	0 - 0.1	7440-32-6
V	0 - 0.1	7440-62-2

IPCI C22C0038-02; C22C0038-04; C22C0038-44; C22C0038-46; C22C0038-48;
C22C0038-50; C22C0038-54; C21D0006-00; C21D0008-02
IPCR C22C0038-02 [I]; C21D0006-00 [I]; C21D0008-02 [I]; C22C0038-04 [I];
C22C0038-44 [I]; C22C0038-46 [I]; C22C0038-48 [I]; C22C0038-50 [I];
C22C0038-54 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST high strength ~~steel~~ strength
IT Casting of metals
(continuous; prepn. method of high-strength ~~steel~~ with
fatigue stress amplitude of $\geq 400\text{mpa}$)
IT Hot rolling
Quenching (cooling)
Tempering
(prepn. method of high-strength ~~steel~~ with fatigue stress
amplitude of $\geq 400\text{mpa}$)
IT ~~2248486-84-02~~, Carbon 0.1-0.2, boron 0-0.1, chromium 0.1-0.4,
manganese 1.2-1.6, molybdenum 0.4-0.8, nickel 0.05-0.2, niobium 0-0.1,
silicon 0.1-0.4, titanium 0-0.1, vanadium 0-0.1, iron bal.
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); PRP (Properties); TEM (Technical or engineered material use);
PREP (Preparation); PROC (Process); USES (Uses)
(prepn. method of high-strength ~~steel~~ with fatigue stress
amplitude of $\geq 400\text{mpa}$)

L12 ANSWER 46 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1950769 CAPLUS Full-text

DOCUMENT NUMBER: 169:495369

TITLE: Microstructural features and corrosion analysis of

A517 ~~steel~~ joint processed by friction stir welding
AUTHOR(S): Ansari pour, Morteza; Soltanipour, Abdol Reza; Dehnavi,
Mohamad Reza

CORPORATE SOURCE: Materials Engineering Department, Malek Ashtar
University of Technology, Shahin Shahr, Iran

SOURCE: Materials Research Express (2018), 5(6),
066543/1-066543/13

CODEN: MREAC3; ISSN: 2053-1591

DIGITAL OBJECT ID: 10.1088/2053-1591/aacc80

PUBLISHER: IOP Publishing Ltd.

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB Microstructural observations of friction stir welds of A517 (B) ~~steel~~
showed that within the range of welding variables, martensite phase was
hindered. Stir zone microstructure displayed coarse-grained upper bainite
assocd. with granular bainite. HAZ consisted of decompd. bainite morphol.
of lath-like and equiaxed. Electron backscatter diffraction anal. showed
a random oriented recrystd. grain. The corrosion behavior in 3.5 wt% NaCl
soln. revealed neg. shift of corrosion potential with increasing of
traverse speed. However, the effect of welding parameters on cathodic
behavior was more predominant than that on anodic behavior; assocd. with
the microstructural alterations. Pitting of corrosion rust layer was
identified as the main mechanism of corrosion attack in base material and
welds. Although, corrosion c.d. of weld in all of the applied welding
condition was slightly lower than that in the base material, however, this
study provides recommendation for application of A517 ~~steel~~ jointed by
friction stir welding in marine environment.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bhadeshia, H	1999	A273-	58	Mater Sci Eng	CAPLUS
Casalino, G	2012		8239	Proc of SPIE-The Int	
Casalino, G	2014		8963	Proc of SPIE-The Int	
Chen, Y	2005	398	47	Mater Sci Eng A	
Choi, Y	2005	391	162	J Alloys Compd	CAPLUS
Cui, H	2016	681	426	J of Alloys and Comp	CAPLUS
Gao, K	2010	52	3428	Corros Sci	CAPLUS
Ghosh, M	2013	22	3890	J Mater Eng Perform	CAPLUS
Huang, H	1994	36	1027	Corros Sci	CAPLUS
Lee, W	2004	58	1041	Mater Lett	CAPLUS
Li, L	2012	7	3773	Int J Electrochem Sc	CAPLUS
Lu, B	2009	57	41	Acta Mater	CAPLUS
Manvatkar, V	2015	94	36	Scr Mater	CAPLUS
Medina, G	2016	21	146	Soldagem & Inspecao	
Meshram, S	2017	25	94	Journal of Manufactu	
Mishra, R	2005	50	1	Mater Sci Eng R	
Nelson, T	2016	231	66	Mater Process Techno	CAPLUS
Park, H	2004	371A	160	Mater Sci Eng	
Paul, C	2015	10	10246	Int J Electrochem Sc	
Ramirez, A	2013		75	Proc of the 1st Int	
Ren, R	2012	85	283	Electrochemica Acta	CAPLUS
Sato, Y	2005	53	637	Acta Mater	CAPLUS
Sato, Y	2001	32A	3033	Metall Mater Trans	CAPLUS
Sherif, E	2015	10	34	Int J Electrochem Sc	CAPLUS
Sherif, E	2011	129	961	Mater Chem Phy	CAPLUS
Sutton, M	2003	70	2215	Eng Fract Mech	
Sutton, M	2003	354A	6	Mater Sci Eng	
Wang, H	2015	10	5827	Int J Electrochem Sc	CAPLUS
Wang, X	2014	9	4574	Int J Electrochem Sc	
Wang, X	2014	21	474	J Nat Gas Sci Eng	CAPLUS
Wert, J	2003	49	607	Scr Mater	CAPLUS
Yan, J	2005	10	725	Sci Tech Weld Joinin	CAPLUS
Zajac, S	2005		387	Proc of the Int Conf	CAPLUS
Zhang, Q	2002	77	603	Mater Chem Phys	
Zhang, R	2010	41A	1448	Metall Mater Trans	CAPLUS
Zhang, S	2013	75	293	Corros Sci	CAPLUS

IT 52346-86-8, A517B, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (microstructural features and corrosion anal. of A517 steel
 joint processed by friction stir welding)

RN 52346-86-8 CAPLUS

CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
Fe	97	- 98	7439-89-6
Mn	0.70	- 1.00	7439-96-5
Cr	0.40	- 0.65	7440-47-3
Si	0.20	- 0.35	7440-21-3
Mo	0.15	- 0.25	7439-98-7
C	0.12	- 0.21	7440-44-0
V	0.03	- 0.08	7440-62-2
S	0	- 0.04	7704-34-9
P	0	- 0.035	7723-14-0
Ti	0.01	- 0.03	7440-32-6
B	0.0005	- 0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)

ST steel joint processed friction stir welding microstructural feature
corrosion

IT Corrosion

Corrosion resistance

Current density

Electric current-potential relationship

Friction welding

Friction welds

Grain size
 Microstructure
 Recrystallization
 (microstructural features and corrosion anal. of A517 steel
 joint processed by friction stir welding)

IT 12173-93-2, Martensite, formation (nonpreparative) 12427-23-5, Bainite
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (microstructural features and corrosion anal. of A517 steel
 joint processed by friction stir welding)

IT 52346-86-8, A517B, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (microstructural features and corrosion anal. of A517 steel
 joint processed by friction stir welding)

L12 ANSWER 47 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1916470 CAPLUS Full-text

DOCUMENT NUMBER: 169:454845

TITLE: Aluminum alloy plated electric resistance welded pipe
 for quenching and method of manufacturing aluminum
 plated hollow member

INVENTOR(S): Maki, Jun; Fujita, Soshi; Nakamura, Toyomitsu

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Tokkyo Koho, 23pp.

CODEN: JTXXFF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 6406475	B1	20181017	JP 2018-513042	20171120
WO 2019097729	A1	20190523	WO 2017-JP41697	20171120
CN 111247266	A	20200605	CN 2017-80096110	20171120
IN 202017014250	A	20200814	IN 2020-17014250	20200331
US 20200347489	A1	20201105	US 2020-16753961	20200406
PRIORITY APPLN. INFO.:			WO 2017-JP41697	W 20171120

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The aluminum alloy plated elec. resistance welded pipe for quenching
 comprises a base material made of tubular steel plate and an elec.
 resistance welded part provided in abutting part of steel plate and
 extending in longitudinal direction. The base material comprises in
 mass%: carbon 0.06-0.5, silicon 0.01-0.8, manganese 0.6-3, phosphorous
 0-0.05, sulfur 0-0.05, aluminum 0-0.1, oxygen 0-0.006, nitrogen 0-0.02,
 titanium 0.01-0.1, boron 0-0.1, niobium 0-0.1, vanadium 0-0.3, chromium
 0-0.5, molybdenum 0-0.5, nickel 0-0.5, copper 0-0.5, calcium 0-0.005, rare
 earth metal 0-0.005, iron balance and impurities. The base material is
 positioned on the surface of steel sheet and has an intermetallic compd.
 layer contg. an aluminum-iron-silicon based intermetallic compd. and an
 aluminum plating layer located on the surface of the intermetallic compd.
 layer and contg. aluminum and silicon. The thickness of intermetallic
 compd. layer is X (μm), the thickness of aluminum layer is Y (μm),
 and when the thickness of steel pipe is t (mm) and outer diam. of
 steel pipe is D (mm), the following formula is satisfied: $70 \times X/D$
 $\leq Y/t \leq 30$. The method of manufg. aluminum plated hollow
 member comprises: positioning the base material on the surface of steel
 sheet, heating aluminum-plated elec. resistance welded pipe, forming the
 heated aluminum-plated elec. resistance welded pipe into desired shape,
 and rapidly cooling the aluminum plating elec. resistance welded pipe.
 According to the present invention, it is possible to manuf. high strength
 aluminum plated hollow member by hot working, and it is possible to obtain
 part that has reduced wt.

RETABLe

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1983			JP 58204179 A	CAPLUS
Anon	2008			JP 2008069398 A	CAPLUS
Anon	2009			WO 2009131233 A1	CAPLUS
Anon	2014			JP 2014118628 A	CAPLUS
Anon	2017			JP 2017026147 A	CAPLUS

IT 2247299-93-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum alloy plated elec. resistance welded pipe for quenching and
method of manufg. aluminum plated hollow member)
RN 2247299-93-8 CAPLUS
CN Iron alloy, base, Fe 93-99,Mn 0.6-3,Si 0-0.8,C 0.1-0.5,Cr 0-0.5,Cu
0-0.5,Mo 0-0.5,Ni 0-0.5,V 0-0.3,Al 0-0.1,B 0-0.1,Nb 0-0.1,Ti 0-0.1 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.6 - 3	7439-96-5
Si	0 - 0.8	7440-21-3
C	0.1 - 0.5	7440-44-0
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
Ni	0 - 0.5	7440-02-0
V	0 - 0.3	7440-62-2
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
Ti	0 - 0.1	7440-32-6

IPCI C23C0002-28 [I]; C23C0002-12 [I]; C23C0002-40 [I]; C23C0002-26 [I];
C23C0028-00 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-08 [N];
C21D0001-18 [N]; C21D0009-50 [N]; C22C0021-00 [N]
IPCR C23C0002-28 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C23C0002-12 [I];
C23C0002-26 [I]; C23C0002-40 [I]; C23C0028-00 [I]
CC 56-6 (Nonferrous Metals and Alloys)

IT 2247299-93-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum alloy plated elec. resistance welded pipe for quenching and
method of manufg. aluminum plated hollow member)

L12 ANSWER 48 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:1651585 CAPLUS Full-text
DOCUMENT NUMBER: 169:330484
TITLE: Method for producing a hot-formed coated steel product
INVENTOR(S): Beentjes, Petrus Cornelis Jozef; Van Schoonevelt, Hugo
PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.
SOURCE: PCT Int. Appl., 28pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018158166	A1	20180907	WO 2018-EP54600	20180223
CA 3051002	A1	20180907	CA 2018-3051002	20180223
MX 2019010192	A	20191002	MX 2019-10192	20180223
CN 110352260	A	20191018	CN 2018-80014405	20180223
KR 2019124211	A	20191104	KR 2019-7023413	20180223
EP 3589772	A1	20200108	EP 2018-714700	20180223
JP 2020510755	T	20200409	JP 2019-546825	20180223
BR 112019015673	A2	20200707	BR 2019-112019015673	20180223
US 20200165712	A1	20200528	US 2019-16485606	20190813
IN 201947037974	A	20190927	IN 2019-47037974	20190920
PRIORITY APPLN. INFO.:			EP 2017-158418	A 20170228
			EP 2017-158419	A 20170228
			WO 2018-EP54600	W 20180223

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to an Al-Si-alloy coated steel strip for hot press
forming and to a method for producing the Al-Si-alloy coated steel strip
in a continuous coating process.

IT 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium

0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for producing hot-formed coated ~~steel~~ product)
 RN 2243499-83-2 CAPLUS
 CN Iron alloy, base, Fe 79-100, Mn 0.4-4, Cr 0-4, Al 0-3, Si 0-3, Cu 0-2, Ni 0-2, Mo 0-1, C 0-0.5, V 0-0.5, W 0-0.5, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	79 - 100	7439-89-6
Mn	0.4 - 4	7439-96-5
Cr	0 - 4	7440-47-3
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Mo	0 - 1	7439-98-7
C	0 - 0.5	7440-44-0
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]
 IPCR C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]
 CC 56-7 (Nonferrous Metals and Alloys)
 ST hot formed aluminum silicon alloy coated ~~steel~~ product prodn
 IT Paints
 (adhesion; method for producing hot-formed coated ~~steel~~ product)
 IT Heating
 (convective, prediffusion annealing; method for producing hot-formed coated ~~steel~~ product)
 IT Aluminizing
 (hot dip; method for producing hot-formed coated ~~steel~~ product)
 IT Hot-dip coating process
 (hot-dip aluminizing; method for producing hot-formed coated ~~steel~~ product)
 IT Metal forming
 (hot; method for producing hot-formed coated ~~steel~~ product)
 IT Automobile bodies
 Cooling
 Cutting
 Diffusion coating materials
 Immersion coating process
 Phase composition
 Surface structure
 Thickness
 (method for producing hot-formed coated ~~steel~~ product)
 IT Adhesion, physical
 (paint; method for producing hot-formed coated ~~steel~~ product)
 IT Induction heating
 Radiant heating
 (prediffusion annealing; method for producing hot-formed coated ~~steel~~ product)
 IT Annealing
 (prediffusion; method for producing hot-formed coated ~~steel~~ product)
 IT 12004-62-5 12043-58-2 596799-27-8, Aluminum iron silicide (Al₂Fe₂Si)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (method for producing hot-formed coated ~~steel~~ product)
 IT 7440-70-2D, Calcium, trace in ~~steel~~ 7704-34-9D, Sulfur, trace in ~~steel~~
 7727-37-9D, Nitrogen, trace in ~~steel~~
 7782-44-7D, Oxygen, trace in ~~steel~~

RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(method for producing hot-formed coated ~~steel~~ product)
IT 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium
0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium
0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5,
vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(method for producing hot-formed coated ~~steel~~ product)
IT 12597-69-2, ~~Steel~~, processes 2243499-81-0, Aluminum 96-100,
silicon 0.4-4
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(method for producing hot-formed coated ~~steel~~ product)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 49 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1651584 CAPLUS Full-text
DOCUMENT NUMBER: 169:330483
TITLE: Method for producing a ~~steel~~ strip with an aluminum
alloy coating layer
INVENTOR(S): Hensen, Guido Cornelis
PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.
SOURCE: PCT Int. Appl., 29pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018158165	A1	20180907	WO 2018-EP54599	20180223
CA 3051515	A1	20180907	CA 2018-3051515	20180223
CN 110352259	A	20191018	CN 2018-80014404	20180223
KR 2019124210	A	20191104	KR 2019-7023412	20180223
EP 3589771	A1	20200108	EP 2018-714699	20180223
BR 112019015695	A2	20200407	BR 2019-112019015695	20180223
JP 2020510756	T	20200409	JP 2019-546864	20180223
US 20200017948	A1	20200116	US 2019-16485655	20190813
IN 201947038244	A	20191004	IN 2019-47038244	20190923
PRIORITY APPLN. INFO.:			EP 2017-158418	A 20170228
			EP 2017-158419	A 20170228
			WO 2018-EP54599	W 20180223

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a method for producing a ~~steel~~ strip with an
aluminum alloy coating layer in a continuous coating process. The
invention also relates to an ~~steel~~ strip coated with an aluminum alloy
coating layer that can be produced in accordance with the method, the use
of such a coated ~~steel~~ strip and the product made by using the coated
~~steel~~ strip.

IT 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium
0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium
0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5,
vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(method for producing ~~steel~~ strip with aluminum alloy coating
layer)

RN 2243499-83-2 CAPLUS

CN Iron alloy, base, Fe 79-100, Mn 0.4-4, Cr 0-4, Al 0-3, Si 0-3, Cu 0-2, Ni 0-2, Mo
0-1, C 0-0.5, V 0-0.5, W 0-0.5, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX
NAME)

Component	Component Percent	Component Registry Number
Fe	79 - 100	7439-89-6
Mn	0.4 - 4	7439-96-5
Cr	0 - 4	7440-47-3
Al	0 - 3	7429-90-5

Si	0	-	3	7440-21-3
Cu	0	-	2	7440-50-8
Ni	0	-	2	7440-02-0
Mo	0	-	1	7439-98-7
C	0	-	0.5	7440-44-0
V	0	-	0.5	7440-62-2
W	0	-	0.5	7440-33-7
Nb	0	-	0.3	7440-03-1
Ti	0	-	0.3	7440-32-6
B	0	-	0.1	7440-42-8
P	0	-	0.1	7723-14-0

IPCI C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]
 IPCR C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]
 CC 56-7 (Nonferrous Metals and Alloys)
 ST aluminum alloy coated ~~steel~~ strip hot dip prodn method
 IT Recrystallization
 (annealing, before hot dipping; method for producing ~~steel~~
 strip with aluminum alloy coating layer)
 IT Induction heating
 Radiant heating
 (annealing; method for producing ~~steel~~ strip with aluminum
 alloy coating layer)
 IT Annealing
 (diffusion; method for producing ~~steel~~ strip with aluminum
 alloy coating layer)
 IT Aluminizing
 (hot dip, continuous; method for producing ~~steel~~ strip with
 aluminum alloy coating layer)
 IT Hot-dip coating process
 (hot-dip aluminizing, continuous; method for producing ~~steel~~
 strip with aluminum alloy coating layer)
 IT Metal forming
 (hot; method for producing ~~steel~~ strip with aluminum alloy
 coating layer)
 IT Automobile bodies
 Cooling
 Cutting
 Diffusion coating materials
 Electric heating
 Phase composition
 Temperature
 Thickness
 (method for producing ~~steel~~ strip with aluminum alloy coating
 layer)
 IT Crack propagation
 (resistance; method for producing ~~steel~~ strip with aluminum
 alloy coating layer)
 IT Wetting
 (time; method for producing ~~steel~~ strip with aluminum alloy
 coating layer)
 IT 12004-62-5 12043-58-2 596799-27-8, Aluminum iron silicide (Al₂Fe₂Si)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (method for producing ~~steel~~ strip with aluminum alloy coating
 layer)
 IT 7440-70-2D, Calcium, trace in ~~steel~~ 7704-34-9D, Sulfur, trace
 in ~~steel~~ 7727-37-9D, Nitrogen, trace in ~~steel~~
 7782-44-7D, Oxygen, trace in ~~steel~~
 RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (method for producing ~~steel~~ strip with aluminum alloy coating
 layer)
 IT 12597-69-2, ~~Steel~~, processes 2243499-81-0, Aluminum 96-100,
 silicon 0.4-4 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon
 0-0.5, chromium 0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel
 0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3,
 tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca
 0-0.05, O 0-0.008 2243499-84-3, Aluminum 97, iron 2.3, silicon 0.9
 2243499-85-4, Aluminum 96, iron 2.3, silicon 1.9 2243499-86-5, Aluminum
 96, iron 2.8, silicon 0.9
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (method for producing ~~steel~~ strip with aluminum alloy coating

layer)
IT 2243499-82-1P, Aluminum 50-55, iron 43-48, silicon 0.4-4
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(method for producing ~~steel~~ strip with aluminum alloy coating
layer)

L12 ANSWER 50 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1606948 CAPLUS Full-text
DOCUMENT NUMBER: 169:308769
TITLE: Manufacture of hot rolled ~~steel~~ sheet with
controllable scale peeling and thickness
INVENTOR(S): Tanei, Hiroshi; Nishioka, Kazuhiko
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018134677	A	20180830	JP 2017-32373	20170223
JP 6790909	B2	20201125		

PRIORITY APPLN. INFO.: JP 2017-32373 20170223

AB The title method for manufg. a hot-rolled ~~steel~~ sheet is capable of
suppressing scale peeling of a hot-rolled ~~steel~~ sheet, particularly
scale peeling at a cooling line (runout table (ROT)) after finish rolling.
In the hot rolling of a ~~steel~~ sheet, the finish rolling is finished at a
temp. of Ar3 point or higher, and based on the relationship between the
Ar3 point scale thickness investigated in advance and the degree of scale
peeling, the scale thickness at the Ar3 point is set as a scale thickness
reflecting scale peeling of the hot rolled ~~steel~~ sheet.

IT 2243127-39-9, Aluminum 0-0.1, boron 0-0.2, carbon 0-0.2,
chromium 0-0.2, copper 0-0.2, iron 96.925-100, manganese 0-2, molybdenum
0-0.2, nickel 0-0.2, niobium 0-0.2, silicon 0-0.5, tin 0-0.2, titanium
0-0.2, vanadium 0-0.2, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(manuf. of hot rolled ~~steel~~ sheet with controllable scale
peeling and thickness)

RN 2243127-39-9 CAPLUS

CN Steel, Fe 97-100, Mn 0-2, Si 0-0.5, B 0-0.2, C 0-0.2, Cr 0-0.2, Cu 0-0.2, Mo
0-0.2, Nb 0-0.2, Ni 0-0.2, Sn 0-0.2, Ti 0-0.2, V 0-0.2, Al 0-0.1 (CA INDEX
NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 100	7439-89-6
Mn	0 - 2	7439-96-5
Si	0 - 0.5	7440-21-3
B	0 - 0.2	7440-42-8
C	0 - 0.2	7440-44-0
Cr	0 - 0.2	7440-47-3
Cu	0 - 0.2	7440-50-8
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ni	0 - 0.2	7440-02-0
Sn	0 - 0.2	7440-31-5
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Al	0 - 0.1	7429-90-5

IPCI B21B0001-26 [I]; B21B0045-00 [I]; B21B0001-26 [I]

IPCR B21B0001-26 [I]; B21B0045-00 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST hot rolling ~~steel~~ sheet manuf scale peeling thickness control

IT Hot rolling
Quality control
Scale (deposits)

Sheet materials

(manuf. of hot rolled ~~steel~~ sheet with controllable scale peeling and thickness)

IT 2243127-39-9, Aluminum 0-0.1, boron 0-0.2, carbon 0-0.2, chromium 0-0.2, copper 0-0.2, iron 96.925-100, manganese 0-2, molybdenum 0-0.2, nickel 0-0.2, niobium 0-0.2, silicon 0-0.5, tin 0-0.2, titanium 0-0.2, vanadium 0-0.2, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (manuf. of hot rolled ~~steel~~ sheet with controllable scale peeling and thickness)

L12 ANSWER 51 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1585183 CAPLUS Full-text
 DOCUMENT NUMBER: 169:330066
 TITLE: The effect of stress relieving treatment on mechanical properties and microstructure of different welding areas of A517 ~~steel~~
 AUTHOR(S): Sharifi, Hassan; Raisi, Solyman; Tayebi, Morteza
 CORPORATE SOURCE: Department of Materials Science, Faculty of Engineering, University of Shahrekord, Shahrekord, Iran
 SOURCE: Materials Research Express (2017), 4(12), 126508/1-126508/12
 CODEN: MREAC3; ISSN: 2053-1591
 DIGITAL OBJECT ID: 10.1088/2053-1591/aa97c2
 PUBLISHER: IOP Publishing Ltd.
 DOCUMENT TYPE: Journal; (online computer file)
 LANGUAGE: English

AB Quench and temper ~~steels~~ are classified as low alloy ~~steels~~. In these types of ~~steel~~, post-weld heat treatment is used to obtain high toughness, elevated strength and better corrosion resistance in addn. to decline residual stress and hydrogen cracking for high pressure vessel applications. In this study, welding mech. properties were characterized by hardness measurements, tensile and impact tests. Addnl., optical microscopy and SEM (SEM) was carried out in order to characterize the microstructure and the fracture anal. of A517 ~~steel~~ before and after the post-weld heat treatment. Residual stress examns. were employed to confirm the data reliability. Results showed no changes in the weld zone microstructures. The residual stress measurements revealed the highest and the lowest residual stresses in non-treated samples and heat treated samples in 560°C, resp. On the other side, hardness and ultimate tensile strength of the specimens was decreased after heat treatment.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ASM International	1993			ASM Handbook, Volume	
Anon	1989			Standard Test Method	
Asm	1983			Metals Handbook, Vol	
Balasubramanian, V	2004	11	575	Eng Failure Anal	CAPLUS
Balasubramanian, V	1999	76	147	Int J Press Vessels	CAPLUS
Balasubramanian, V	2000	32	265	Mech Mater	
Bhadeshia, H	2001	41	626	ISIJ Int	CAPLUS
Bhadeshia, H	2006			Steels:Microstructur	
Bray, D	1995	28	235	NDT&E Int	
Brito, V	2001	10	249	J Mater Eng Perform	
Cho, J	2004	155-6	1690	J Mater Process Tech	
Dorsch, K	1978			Welding Research Rep	
Dumovic, M	1999			The WTIA 47th Annual	
Huang, C	1997	6	61	J Mater Eng Perform	CAPLUS
Javadi, Y	2014	123-4	111	Int J Press Vessels	
Lochhead, J	1972	80	187	J West Scotland ISI	
Mochizuki, M	2007	237	107	Nucl Eng Des	CAPLUS
O'Brien, M	2000	45	2000	Australas Weld J	
Rosenbrock, L	1999			The WTIA 47th Annual	
Smith, C	1997	70	183	Int J Press Vessels	CAPLUS
Soete, W	1949	28	354	Weld J	
Sterjovski, Z	2004	81	465	Int J Press Vessels	CAPLUS
Sterjovski, Z	2005			Thesis In Fulfilment	
Teng, T	2003	81	273	Comput Struct	

Totten, G | 2006 | | | Steel Heat Treatment |
Vangi, D | 2001 | 41 | 277 | Exp Mech | CAPLUS
IT 52346-86-8, A517B, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(effect of stress relieving treatment on mech. properties and
microstructure of different welding areas of A517 steel)
RN 52346-86-8 CAPLUS
CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	0.70 - 1.00	7439-96-5
Cr	0.40 - 0.65	7440-47-3
Si	0.20 - 0.35	7440-21-3
Mo	0.15 - 0.25	7439-98-7
C	0.12 - 0.21	7440-44-0
V	0.03 - 0.08	7440-62-2
S	0 - 0.04	7704-34-9
P	0 - 0.035	7723-14-0
Ti	0.01 - 0.03	7440-32-6
B	0.0005 - 0.005	7440-42-8

CC 55-5 (Ferrous Metals and Alloys)
ST steel heat treatment welding mech property
IT Heat treatment
(Post-weld; effect of stress relieving treatment on mech. properties
and microstructure of different welding areas of A517 steel)
IT Corrosion
Corrosion resistance
Ductility
Fracture (materials)
Grain boundaries
Microstructure
Stress, mechanical
Tensile strength
Toughness
Vickers hardness
Yield strength
(effect of stress relieving treatment on mech. properties and
microstructure of different welding areas of A517 steel)
IT 52346-86-8, A517B, processes 344335-51-9, ER90S-G, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(effect of stress relieving treatment on mech. properties and
microstructure of different welding areas of A517 steel)

L12 ANSWER 52 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:1359640 CAPLUS Full-text
DOCUMENT NUMBER: 169:213564
TITLE: Low cost and high hardenability HB450 grade medium
plate wear resistant steel plate and preparation
method thereof
INVENTOR(S): He, Yayuan; Yin, Yunyang; Xi, Tianhui; Cai, Zhen; Lu,
Zaixue; Du, Ming; Wang, Shisen; Ma, Yuxi; Li, Defa
PATENT ASSIGNEE(S): Wuhan Iron & Steel Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 8pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
PATENT NO. KIND DATE APPLICATION NO. DATE
CN 108315652 A 20180724 CN 2018-10398720 20180428
CN 108315652 B 20190924
PRIORITY APPLN. INFO.: CN 2018-10398720 20180428
AB The invention provides a low-cost high-hardenability HB450 grade
medium-thick plate wear-resistant steel plate, which main components

are: carbon 0.2-0.3, iron balance, manganese 3.7-4, molybdenum 0.2-0.4, nickel 0.4, phosphorus 0-0.01, silicon 1.4-1.6, sulfur 0-0.005, vanadium 0.2. The invention also provides a method for prepg. the wear-resistant ~~steel~~ plate. The wear-resistant ~~steel~~ plate is simple in prepn., uniform in structure, high tensile strength and high hardness.

IT 1315482-08-6P, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(low cost and high hardenability HB450 grade medium plate wear resistant ~~steel~~ plate and prepn. method thereof)

RN 1315482-08-6 CAPLUS

CN Steel, (HB450) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	1.2 - 1.6	7439-96-5
Si	0.4 - 0.6	7440-21-3
B	0 - 0.4	7440-42-8
Cr	0 - 0.4	7440-47-3
Ti	0 - 0.4	7440-32-6
C	0.2	7440-44-0

IPCI C22C0038-02; C22C0038-04; C22C0038-08; C22C0038-12; C21D0001-18; C21D0008-02

IPCR C22C0038-02 [I]; C21D0001-18 [I]; C21D0008-02 [I]; C22C0038-04 [I]; C22C0038-08 [I]; C22C0038-12 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST HB450 grade plate wear resistant ~~steel~~ plate prepn

IT Melting
Rolling (metals)
Wear-resistant materials
(low cost and high hardenability HB450 grade medium plate wear resistant ~~steel~~ plate and prepn. method thereof)

IT 1315482-08-6P, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(low cost and high hardenability HB450 grade medium plate wear resistant ~~steel~~ plate and prepn. method thereof)

L12 ANSWER 53 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1216619 CAPLUS Full-text

DOCUMENT NUMBER: 169:149309

TITLE: Preparation method of low-chromium impact-resistant high temperature wear resistant alloy ~~steel~~

INVENTOR(S): Chen, Zhanghua

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 10pp.
CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 108220816	A	20180629	CN 2017-11474500	20171229

PRIORITY APPLN. INFO.: CN 2017-11474500 20171229

AB The title low-chromium impact-resistant high temp. wear resistant alloy ~~steel~~ comprises the following components by wt. percentages: carbon 0.1-0.5, silicon 0.4-2.2, manganese 0.5-1.5, phosphorus 0-0.04, sulfur 0-0.04, chromium 0.5-3.5, nickel 0.2-2.2, molybdenum 0.1-0.7, boron 0-0.2, aluminum 0.1-0.5, cerium 0.2-1.2, tin 0.02-0.20, vanadium 0-0.8, tungsten 0.1-1.5, copper 0.05-0.4, tantalum 0.005-0.02, cobalt 0.05-0.2, holmium 0.05-0.2, magnesium 0.01-0.04, calcium 0.003-0.015, titanium 0.05-0.1, niobium 0-0.2, iron bal. The invention also discloses a prepn. method of the alloy ~~steel~~. The alloy ~~steel~~ prepd. by special process can ensure high toughness and impact resistance, and improve the wear resistance and hardness.

IT 2231423-67-4P, Carbon 0.1-0.5, silicon 0.4-2.2, manganese 0.5-1.5, chromium 0.5-3.5, nickel 0.2-2.2, molybdenum 0.1-0.7, boron

0-0.2, aluminum 0.1-0.5, cerium 0.2-1.2, tin 0.02-0.2, vanadium 0-0.8, tungsten 0.1-1.5, copper 0.05-0.4, cobalt 0.05-0.2, holmium 0.05-0.2, titanium 0.05-0.1, niobium 0-0.2, iron bal.
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (prepn. method of low-chromium impact-resistant high temp. wear resistant alloy ~~steel~~)
 RN 2231422-67-4 CAPLUS
 CN Iron alloy, base, Fe 84-98, Cr 0.5-3.5, Si 0.4-2.2, Ni 0.2-2.2, Mn 0.5-1.5, W 0.1-1.5, Ce 0.2-1.2, V 0-0.8, Mo 0.1-0.7, Al 0.1-0.5, C 0.1-0.5, Cu 0-0.4, B 0-0.2, Co 0-0.2, Ho 0-0.2, Nb 0-0.2, Sn 0-0.2, Ti 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Fe	84 - 98	7439-89-6
Cr	0.5 - 3.5	7440-47-3
Si	0.4 - 2.2	7440-21-3
Ni	0.2 - 2.2	7440-02-0
Mn	0.5 - 1.5	7439-96-5
W	0.1 - 1.5	7440-33-7
Ce	0.2 - 1.2	7440-45-1
V	0 - 0.8	7440-62-2
Mo	0.1 - 0.7	7439-98-7
Al	0.1 - 0.5	7429-90-5
C	0.1 - 0.5	7440-44-0
Cu	0 - 0.4	7440-50-8
B	0 - 0.2	7440-42-8
Co	0 - 0.2	7440-48-4
Ho	0 - 0.2	7440-60-0
Nb	0 - 0.2	7440-03-1
Sn	0 - 0.2	7440-31-5
Ti	0 - 0.1	7440-32-6

IPCI C22C0038-54; C22C0038-52; C22C0038-50; C22C0038-48; C22C0038-46; C22C0038-44; C22C0038-42; C22C0038-06; C22C0038-04; C22C0038-02; C22C0033-04
 IPCR C22C0038-54 [I]; C22C0033-04 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-42 [I]; C22C0038-44 [I]; C22C0038-46 [I]; C22C0038-48 [I]; C22C0038-50 [I]; C22C0038-52 [I]
 CC 55-1 (Ferrous Metals and Alloys)
 ST low chromium alloy ~~steel~~ prepn
 IT Deoxidation
 Wear-resistant materials
 (prepn. method of low-chromium impact-resistant high temp. wear resistant alloy ~~steel~~)
 IT ~~2231422-67-4~~, Carbon 0.1-0.5, silicon 0.4-2.2, manganese 0.5-1.5, chromium 0.5-3.5, nickel 0.2-2.2, molybdenum 0.1-0.7, boron 0-0.2, aluminum 0.1-0.5, cerium 0.2-1.2, tin 0.02-0.2, vanadium 0-0.8, tungsten 0.1-1.5, copper 0.05-0.4, cobalt 0.05-0.2, holmium 0.05-0.2, titanium 0.05-0.1, niobium 0-0.2, iron bal.
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (prepn. method of low-chromium impact-resistant high temp. wear resistant alloy ~~steel~~)
 IT 409-21-2, Silicon carbide (SiC), processes 7429-90-5, Aluminum, processes 12597-69-2, ~~steel~~, processes 71965-70-3
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (prepn. method of low-chromium impact-resistant high temp. wear resistant alloy ~~steel~~)

L12 ANSWER 54 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1170345 CAPLUS Full-text

DOCUMENT NUMBER: 169:96882

TITLE: High-strength ~~steel~~ sheet and its manufacture for automobile parts

INVENTOR(S): Otani, Shigeo; Murakami, Toshio; Kakiuchi, Elijah; Nimura, Yuichi; Murata, Tadao

PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018095896	A	20180621	JP 2016-238742	20161208
PRIORITY APPLN. INFO.:			JP 2016-238742	20161208

AB The title high-strength ~~steel~~ sheet has high tensile strength, tensile strength $\times$ total elongation, deep drawability, hole expanding ratio, limiting dome height, thickness redn. rate of a broken part during tensile test, and cross tension strength of spot weld. The ~~steel~~ sheet comprises (by wt.%): C 0.15-0.35, Si + Al 0.5-3.0, Mn 1.0-4.0, P $\leq$ 0.05, S $\leq$ 0.01, and Fe and inevitable impurities as bal. The ~~steel~~ structure has a ferrite fraction $\leq$ 5%, a total fraction of tempered martensite and tempered bainite $\geq$ 60%, a retained austenite amt. $\geq$ 10%, an av. size of retained austenite $\leq$ 1.0 μ m, and an av. size of MA $\leq$ 1.0 μ m. The amt. of retained austenite with size of 1.5 μ m or more is 2% or more of the total amt. of retained austenite. A half width of a concn. distribution of Mn in carbon concd. region equal to the amt. of the retained austenite is $\geq$ 0.3 wt.%. A scattering intensity of the ~~steel~~ structure at q value of 1 nm⁻¹ in a small angle X-ray scattering is 1.0 cm⁻¹ or less.

IT 2228951-13-9P, Aluminum 0-3, silicon 0-3, carbon 0.15-0.35, chromium 0-1, copper 0-1, hafnium 0-0.2, iron 91.38-98.35, manganese 1-4, molybdenum 0-1, nickel 0-1, niobium 0-0.2, titanium 0-0.2, vanadium 0-0.2, zirconium 0-0.2, B 0-1
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

RN 2228951-13-9 CAPLUS

CN Iron alloy, base, Fe 91-98, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.2-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.2 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]
IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)
ST ~~steel~~ sheet strength manuf automobile part
IT Automobile parts
Casting of metals
Cold rolling
Cooling
Elongation, mechanical
Heat treatment
Heating
Hot rolling
Melting
Microstructure
Pickling
Sheet materials

Tempering
Tensile strength
(high-strength steel sheet and its manuf. for automobile parts)

IT 2228951-13-9P, Aluminum 0-3, silicon 0-3, carbon 0.15-0.35, chromium 0-1, copper 0-1, hafnium 0-0.2, iron 91.38-98.35, manganese 1-4, molybdenum 0-1, nickel 0-1, niobium 0-0.2, titanium 0-0.2, vanadium 0-0.2, zirconium 0-0.2, B 0-1
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength steel sheet and its manuf. for automobile parts)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L12 ANSWER 55 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:1167096 CAPLUS Full-text
DOCUMENT NUMBER: 169:54945
TITLE: Method for manufacturing steel containing low manganese and high light metal
INVENTOR(S): Hayat, Fatih
PATENT ASSIGNEE(S): Turk.
SOURCE: Turk. Pat. Appl., 26pp.
CODEN: TRXXB5
DOCUMENT TYPE: Patent
LANGUAGE: Turkish
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
TR 2017000434	A2	20170620	TR 2017-434	20170111
PRIORITY APPLN. INFO.:			TR 2017-434	20170111

AB The present invention relates to a manufg. method for a steel, that facilitates by the warm rolling method. The steel is aimed to reduce the use of manganese with normal use of nickel and boron, convenient to use in automobile products due to lowering of manganese cost. The ultra high strength steel compn. is hard, pull resistance is high, tough, ductile, magnetism strength used in the construction of dampers and armor steel, firearms, military equipment, pressure tubes, containers, tanks, gun barrel, road refills, ballistic steel.

IT 2227442-11-5P, Aluminum 0-41, boron 0-0.2, carbon 0.01-2, chromium 0-9, cobalt 0-5, copper 0-6, manganese 2-2.7, molybdenum 0-6, nickel 0-27, nickel 0-5, nitrogen 0-6, silicon 0-11, tantalum 0-5, titanium 0-5, tungsten 0-5, vanadium 0-5, iron bal.
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for manufg. steel contg. low manganese and high light metal)

RN 2227442-11-5 CAPLUS

CN Iron alloy, base, Fe 0-98, Al 0-41, Ni 0-27, Si 0-11, Cr 0-9, Cu 0-6, Mo 0-6, N 0-6, Co 0-5, Nb 0-5, Ta 0-5, Ti 0-5, V 0-5, W 0-5, Mn 2-2.7, C 0-2, B 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	0 - 98	7439-89-6
Al	0 - 41	7429-90-5
Ni	0 - 27	7440-02-0
Si	0 - 11	7440-21-3
Cr	0 - 9	7440-47-3
Cu	0 - 6	7440-50-8
Mo	0 - 6	7439-98-7
N	0 - 6	17778-88-0
Co	0 - 5	7440-48-4
Nb	0 - 5	7440-03-1
Ta	0 - 5	7440-25-7
Ti	0 - 5	7440-32-6
V	0 - 5	7440-62-2
W	0 - 5	7440-33-7
Mn	2 - 2.7	7439-96-5

C 0 - 2 7440-44-0
B 0 - 0.2 7440-42-8

IPCI C22C0038-44 [I]
CC 55-1 (Ferrous Metals and Alloys)
ST manufg ~~steel~~ low manganese light metal
IT Automobile parts
Rolling (metals)
(method for manufg. ~~steel~~ contg. low manganese and high light metal)
IT 2237442-11-5P, Aluminum 0-41, boron 0-0.2, carbon 0.01-2, chromium 0-9, cobalt 0-5, copper 0-6, manganese 2-2.7, molybdenum 0-6, nickel 0-27, nickel 0-5, nitrogen 0-6, silicon 0-11, tantalum 0-5, titanium 0-5, tungsten 0-5, vanadium 0-5, iron bal.
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for manufg. ~~steel~~ contg. low manganese and high light metal)

L12 ANSWER 56 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1120703 CAPLUS Full-text

DOCUMENT NUMBER: 169:78182

TITLE: High-strength ~~steel~~ sheet and its manufacture for automobile parts

INVENTOR(S): Otani, Shigeo; Murakami, Toshio; Kakiuchi, Elijah; Futamura, Yuichi; Murata, Tadao

PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2018090877	A	20180614	JP 2016-237032	20161206
PRIORITY APPLN. INFO.:			JP 2016-237032	20161206

AB The ~~steel~~ sheet comprises the following components in mass%: 0.15-0.35 of carbon, 0.5-3 of aluminum, 0.5-3 of silicon, 1-4 of manganese, 0-0.05 of phosphorous, 0-0.01 of sulfur, balance iron and inevitable impurities. The ferrite fraction is 5% or less, the total fraction of tempered martensite and tempered bainite is 60% or more, the amt. of retained austenite is 10% or more, the av. size of retained austenite is 1.0 μ m or less. The retained austenite having a size of 1.5 μ m or more is 2% or more of the total residual austenite amt., the av. size of MA is 1.0 μ m or less and a half-value width of the concn. distribution of manganese in the carbon concd. region which is equal to the amt. of retained austenite is 0.3% by mass or more. According to the present invention, it is possible to provide a ~~steel~~ sheet having good tensile strength used for various applications including automobile parts is provided.

IT 2228951-13-9P, Aluminum 0-3, boron 0-1, carbon 0.15-0.35, chromium 0-1, copper 0-1, iron 91.38-98.35, manganese 1-4, molybdenum 0-1, nickel 0-1, niobium 0-0.2, silicon 0-3, titanium 0-0.2, vanadium 0-0.2, zirconium 0-0.2, hafnium 0-0.2

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

RN 2228951-13-9 CAPLUS

CN Iron alloy, base, Fe 91-98, Mn 1-4, Al 0-3, Si 0-3, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.2-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3

B	0	-	1	7440-42-8
Cr	0	-	1	7440-47-3
Cu	0	-	1	7440-50-8
Mo	0	-	1	7439-98-7
Ni	0	-	1	7440-02-0
C	0.2	-	0.4	7440-44-0
Hf	0	-	0.2	7440-58-6
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
V	0	-	0.2	7440-62-2
Zr	0	-	0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I]
 IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST high strength ~~steel~~ sheet manuf automobile part

IT Automobile parts

Casting of metals

Cold rolling

Elongation, mechanical

Heat treatment

Hot rolling

Melting

Microstructure

Pickling

Sheet materials

Tensile strength

(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

IT Forging

(hot; high-strength ~~steel~~ sheet and its manuf. for automobile parts)

IT ~~2228951-13-9P~~, Aluminum 0-3, boron 0-1, carbon 0.15-0.35, chromium 0-1, copper 0-1, iron 91.38-98.35, manganese 1-4, molybdenum 0-1, nickel 0-1, niobium 0-0.2, silicon 0-3, titanium 0-0.2, vanadium 0-0.2, zirconium 0-0.2, hafnium 0-0.2

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(high-strength ~~steel~~ sheet and its manuf. for automobile parts)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L12 ANSWER 57 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:975370 CAPLUS Full-text

DOCUMENT NUMBER: 169:42654

TITLE: HB450 crack resistant duplex structure wear-resistant ~~steel~~ and preparation method thereof

INVENTOR(S): Li, Defa; Guan, Jisheng; Yan, Xiang; Wang, Shisen; Ma, Yuxi

PATENT ASSIGNEE(S): Wuhan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 9pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 108060362	A	20180522	CN 2017-11392536	20171221
			CN 2017-11392536	20171221

PRIORITY APPLN. INFO.:

AB The invention discloses a HB450 crack resistant duplex structure wear-resistant ~~steel~~ and prepn. method thereof, which has high use safety and high efficiency. The ~~steel~~ includes the following components in mass percentage: C 0.15-0.20%, Si 0.80-1.20%, Mn 1.20-1.55%, P≤0.015%, S≤0.010%, Cr 0.85-1.25%, Mo 0.25-0.55%, Nb 0.02-0.04%, Ti 0.005-0.025%, B 0.001-0.005%, Als 0.010-0.040%, N≤0.0055%, Fe balance.

IT ~~1315482-08-6~~, HB450, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(hB450 crack resistant duplex structure wear-resistant ~~steel~~
and prepn. method thereof)

RN 1315482-08-6 CAPLUS

CN Steel, (HB450) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	1.2 - 1.6	7439-96-5
Si	0.4 - 0.6	7440-21-3
B	0 - 0.4	7440-42-8
Cr	0 - 0.4	7440-47-3
Ti	0 - 0.4	7440-32-6
C	0.2	7440-44-0

IPCI C22C0038-38; C22C0038-04; C22C0038-02; C22C0038-22; C22C0038-26;
C22C0038-28; C22C0038-32; C22C0038-06; C21D0008-02; C21D0001-18;
C21D0006-00

IPCR C22C0038-38 [I]; C21D0001-18 [I]; C21D0006-00 [I]; C21D0008-02 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-22 [I];
C22C0038-26 [I]; C22C0038-28 [I]; C22C0038-32 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~

IT Wear-resistant materials

(hB450 crack resistant duplex structure wear-resistant ~~steel~~
and prepn. method thereof)

IT 1315482-08-6, HB450, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(hB450 crack resistant duplex structure wear-resistant ~~steel~~
and prepn. method thereof)

L12 ANSWER 58 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:863056 CAPLUS Full-text

DOCUMENT NUMBER: 168:486049

TITLE: ~~Steel~~ welding part with aluminum or aluminum alloy
plating layer and manufacture method thereof

INVENTOR(S): Pan, Hua; Su, Yongchao; Lei, Ming; Shi, Lei; Jiang,
Haomin

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: PCT Int. Appl., 17pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018077067	A1	20180503	WO 2017-CN106516	20171017
CN 106334875	A	20170118	CN 2016-10953787	20161027
MX 2019004121	A	20190606	MX 2019-4121	20171017
KR 2019069471	A	20190619	KR 2019-7013481	20171017
EP 3533558	A1	20190904	EP 2017-864438	20171017
JP 2019535894	T	20191212	JP 2019-520992	20171017
US 20200038998	A1	20200206	US 2019-16339215	20190403
IN 201917015151	A	20190719	IN 2019-17015151	20190415
PRIORITY APPLN. INFO.:			CN 2016-10953787	A 20161027
			WO 2017-CN106516	W 20171017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention discloses a ~~steel~~ welding part with aluminum or aluminum
alloy plating layer and manuf. method thereof. The ~~steel~~ welding part
with aluminum or aluminum alloy plating layer comprises a ~~steel~~
substrate and a plating layer, the plating layer comprises an
intermetallic compd. alloy layer in contact with the substrate, and a
metal alloy layer thereon; which is characterized in that on at least one
of the plated surfaces of the weld blank, the plating layer located in the
area to be welded of the weld blank is completely removed, and the end
face of the welding blank part plating layer removed the region to be
welded is perpendicular to the surface of the substrate which is parallel
to weld seam to form an included angle β , and the included angle

$\beta = 0-80^\circ$. A method of manufg. ~~steel~~ welding part with aluminum or aluminum alloy plating layer is characterized in that it includes the steps of: obtaining weld blank by welding according to the requirements of ~~steel~~ welding part with aluminum or aluminum alloy plating layer, welding the area to be welded of the weld blank where the plating layer has been completely removed to form a welded joint; obtaining a part by hot stamping, selecting a cooling rate which is greater than the crit. transformation speed of the matrix martensite quenching, and cooling. This invention ensures tensile strength, elongation rate and corrosion resistance of welding joint after hot stamping.

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

RN 2067242-22-0 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B23K0026-32 [I]; C22C0038-04 [I]
 IPCR B23K0026-32 [I]; C22C0038-04 [I]
 CC 56-9 (Nonferrous Metals and Alloys)
 Section cross-reference(s): 47

ST ~~steel~~ laser welding corrosion strength

IT Corrosion resistance
 Elongation, mechanical
 Laser welding
 Plating process
 Tensile strength
 (~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT Intermetallic compounds
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT 1273096-81-3, Aluminum alloy
 RL: TEM (Technical or engineered material use); USES (Uses)
 (~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

L12 ANSWER 59 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:228290 CAPLUS Full-text

DOCUMENT NUMBER: 168:225095

TITLE: Low-carbon ~~steel~~ sheet and plated ~~steel~~ sheet for automobile parts

INVENTOR(S): Sano, Kohichi; Uno, Makoto; Nishiyama, Ryoichi;
 Yamaguchi, Yuji; Sugiura, Natsuko; Nakata, Masahiro

ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1220 of 1430

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: PCT Int. Appl., 54pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018026015	A1	20180208	WO 2017-JP28478	20170804
TW I629367	B	20180711	TW 2017-126478	20170804
JP 6358406	B2	20180718	JP 2017-562089	20170804
KR 2019012262	A	20190208	KR 2019-7000430	20170804
KR 2205432	B1	20210120		
MX 2019000051	A	20190401	MX 2019-51	20170804
CN 109563586	A	20190402	CN 2017-80047871	20170804
BR 112019000422	A2	20190430	BR 2019-112019000422	20170804
EP 3495529	A1	20190612	EP 2017-837116	20170804
US 20190233926	A1	20190801	US 2018-16312222	20181220
US 10889879	B2	20210112		
IN 201817049387	A	20190322	IN 2018-17049387	20181227

PRIORITY APPLN. INFO.:

JP 2016-155090	A	20160805
WO 2017-JP28478	W	20170804

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The ~~steel~~ plate has chem. compn. as: aluminum 0.010-0.6, boron 0.0005-0.1, calcium 0.0001-0.05, carbon 0.008-0.15, chromium 0.05-1, copper 0.01-2, iron and impurities balance, magnesium 0.0001-0.05, manganese 0.60-2.5, molybdenum 0.01-1, nickel 0.01-2, niobium 0-0.2, nitrogen 0-0.006, phosphorus 0-0.05, rare earth metal 0.0001-0.05, silicon 0.01-1.7, sulfur 0-0.02, titanium 0-0.2, titanium and niobium 0.015-0.2, zirconium 0.0001-0.05, in mass%, and is provided with a structure represented by, in terms of area ratio, 5-95% ferrite and 5-95% bainite. When a crystal grain is defined as a region which is surrounded by grain boundaries having disorientation of 15°-or higher and for which the equiv. circle diam. is 0.3µm or larger, the proportion of crystal grains having an intragranular disorientation of 5-14°-relative to all of crystal grains is 20-100% in terms of area ratio. The ~~steel~~ plate comprises hard material crystal grains A in which ppts. or clusters with max. diam. of no larger than 8 nm are distributed in no. d. of 1×10¹⁶-1×10¹⁹ particles/cm³, and soft material crystal grains B in which ppts. or clusters with a max. diam. of no larger than 8 nm are distributed in no. d. of no higher than 1×10¹⁵ particles/cm³, and the vol.% of hard material crystal grains A/(vol.% of hard material crystal grains A+vol.% of soft material crystal grains B) is 0.1-0.9. The plated ~~steel~~ plate has galvanized plated layer. The ~~steel~~ plate has high strength, good ductility and stretch flangeability, and high yield stress.

IT 2178084-33-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(low-carbon ~~steel~~ sheet and plated ~~steel~~ sheet for automobile parts)

RN 2178084-33-6 CAPLUS

CN Iron alloy, base, Fe 89-99, Mn 0.6-2.5, Cu 0-2, Ni 0-2, Si 0-1.7, Cr 0-1, Mo 0-1, Al 0-0.6, C 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 99	7439-89-6
Mn	0.6 - 2.5	7439-96-5
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Si	0 - 1.7	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Al	0 - 0.6	7429-90-5
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [N]
 IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-58 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 ST low carbon ~~steel~~ sheet plating automobile part
 IT Automobile parts
 Elongation, mechanical
 Galvannealing
 Grain size
 Hot-dip galvanizing
 Microstructure
 Sheet materials
 Tensile strength
 Yield strength
 (low-carbon ~~steel~~ sheet and plated ~~steel~~ sheet for automobile parts)
 IT 2178004-33-6
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (low-carbon ~~steel~~ sheet and plated ~~steel~~ sheet for automobile parts)
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L12 ANSWER 60 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2018:228269 CAPLUS Full-text
 DOCUMENT NUMBER: 168:225078
 TITLE: ~~Steel~~ sheet having ferrite and bainite structure and plated ~~steel~~ sheet
 INVENTOR(S): Sano, Kohichi; Uno, Makoto; Nishiyama, Ryoichi; Yamaguchi, Yuji; Sugiura, Natsuko; Nakata, Masahiro
 PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
 SOURCE: PCT Int. Appl., 53pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018026014	A1	20180208	WO 2017-JP28477	20170804
TW 1629369	B	20180711	TW 2017-126479	20170804
JP 6358407	B2	20180718	JP 2017-562090	20170804
KR 2019014077	A	20190211	KR 2019-7000254	20170804
KR 2186320	B1	20201203		
CN 109563580	A	20190402	CN 2017-80046261	20170804
BR 112019000766	A2	20190424	BR 2019-112019000766	20170804
EP 3495528	A1	20190612	EP 2017-837115	20170804
MX 2019000576	A	20190902	MX 2019-576	20170804
IN 201817048127	A	20190301	IN 2018-17048127	20181219
US 20190226061	A1	20190725	US 2019-16315120	20190103
PRIORITY APPLN. INFO.:			JP 2016-155100	A 20160805
			WO 2017-JP28477	W 20170804

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to a ~~steel~~ sheet having a specific chem. compn. and structure, in terms of area ratio, 30 - 95% ferrite and 5 - 70% bainite. The crystal grain is defined as a region which is surrounded by grain boundaries having a misorientation of 15° or higher and for which the equiv. circle diam. is 0.3 µm or larger, the proportion of crystal grains having an intragranular misorientation of 5 - 14° relative to all of the crystal grains is 20 - 100% in terms of area ratio. The av. aspect ratio of ellipses equiv. to the crystal grains is 5 or low. The av. distribution d. of the total of Ti carbides and Nb carbides having a particle size of 20 nm or larger in the ferrite grain boundaries is 10 particles/µm or low.
 IT 2176433-58-0, Aluminum 0.01-0.6, boron 0-0.1, carbon 0.008-0.2, chromium 0-1, copper 0-2, manganese 0.6-2.5, molybdenum 0-1, nickel 0-2, niobium 0-0.2, silicon 0.01-1.7, titanium 0-0.2, iron bal.
 RL: TEM (Technical or engineered material use); USES (Uses)
 (~~steel~~ sheet with ferrite and bainite structure and plated ~~steel~~ sheet)
 RN 2176433-58-0 CAPLUS

CN Iron alloy, base, Fe 88-99,Mn 0.6-2.5,Cu 0-2,Ni 0-2,Si 0-1.7,Cr 0-1,Mo 0-1,Al 0-0.6,C 0-0.2,Nb 0-0.2,Ti 0-0.2,B 0-0.1 (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	88	-	99	7439-89-6
Mn	0.6	-	2.5	7439-96-5
Cu	0	-	2	7440-50-8
Ni	0	-	2	7440-02-0
Si	0	-	1.7	7440-21-3
Cr	0	-	1	7440-47-3
Mo	0	-	1	7439-98-7
Al	0	-	0.6	7429-90-5
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
B	0	-	0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [N]
IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-58 [I]
CC 55-1 (Ferrous Metals and Alloys)
ST ~~steel~~ sheet ferrite bainite structure
IT Automobile parts
Grain boundaries
Particle size
Plates
(~~steel~~ sheet with ferrite and bainite structure and plated
steel sheet)
IT 7440-66-6, Zinc, uses 12173-93-2, Martensite, uses 12427-23-5, Bainite
12427-24-6, Ferrite (ferrous metal component) 12427-27-9, Pearlite
12597-69-2, ~~Steel~~, uses 2176433-58-0, Aluminum
0.01-0.6, boron 0-0.1, carbon 0.008-0.2, chromium 0-1, copper 0-2,
manganese 0.6-2.5, molybdenum 0-1, nickel 0-2, niobium 0-0.2, silicon
0.01-1.7, titanium 0-0.2, iron bal.
RL: TEM (Technical or engineered material use); USES (Uses)
(~~steel~~ sheet with ferrite and bainite structure and plated
steel sheet)

L12 ANSWER 61 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:228265 CAPLUS Full-text
DOCUMENT NUMBER: 168:213107
TITLE: ~~Steel~~ sheet containing ferrite and bainite and
plated ~~steel~~ sheet
INVENTOR(S): Sano, Kohichi; Uno, Makoto; Nishiyama, Ryoichi;
Yamaguchi, Yuji; Sugiura, Natsuko; Nakata, Masahiro
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: PCT Int. Appl., 55pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:						
PATENT NO.		KIND	DATE	APPLICATION NO.		DATE
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WO 2018026013		A1	20180208	WO 2017-JP28472		20170804
JP 6354916		B2	20180711	JP 2017-562103		20170804
TW I629368		B	20180711	TW 2017-126480		20170804
KR 2019015539		A	20190213	KR 2019-7000428		20170804
CN 109477184		A	20190315	CN 2017-80046243		20170804
BR 112019001331		A2	20190507	BR 2019-112019001331		20170804
MX 2018016223		A	20190530	MX 2018-16223		20170804
EP 3495527		A1	20190612	EP 2017-837114		20170804
IN 201817047671		A	20190222	IN 2018-17047671		20181217
US 20190309398		A1	20191010	US 2019-16314945		20190103
PRIORITY APPLN. INFO.:				JP 2016-155101	A	20160805
				WO 2017-JP28472	W	20170804

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB The title ~~steel~~ sheet has a structure contg. ferrite 5-60 area% and
bainite 40-95 area%. The ~~steel~~ sheet comprises (by wt.%): C
0.008-0.150, Si 0.01-1.70, Mn 0.60-2.50, Al 0.010-0.60, Ti 0-0.200, Nb

0-0.200, Ti+Nb 0.015-0.200, Cr 0-1.0, B 0-0.10, Mo 0-1.0, Cu 0-2.0, Ni 0-2.0, Mg 0-0.05, REM 0-0.05, Ca 0-0.05, Zr 0-0.05, P 0-0.05, S 0-0.0200, N 0-0.0060, and Fe and unavoidable impurities as balance. When a crystal grain is defined as a region which is surrounded by grain boundaries having a misorientation of 15° or higher and for which the equiv. circle diam. is 0.3 µm or larger, the proportion of crystal grains having an intragranular misorientation of 5-14° relative to all of the crystal grains is 20-100% in terms of area ratio. The ppt. d. of Ti (C, N) and Nb (C, N) particles having an equiv. circle diam. of 10 nm or smaller is at least 1010 particles/mm³. The ratio (Hvs/Hvc) of the hardness (Hvs) at a depth of 20 µm from the surface and the hardness (Hvc) at the center in terms of the sheet thickness is 0.85 or higher.

IT 2176433-58-0
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (steel sheet contg. ferrite and bainite and plated steel sheet)
 RN 2176433-58-0 CAPLUS
 CN Iron alloy, base, Fe 88-99, Mn 0.6-2.5, Cu 0-2, Ni 0-2, Si 0-1.7, Cr 0-1, Mo 0-1, Al 0-0.6, C 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	88 - 99	7439-89-6
Mn	0.6 - 2.5	7439-96-5
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Si	0 - 1.7	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Al	0 - 0.6	7429-90-5
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [N]
 IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST steel sheet plating

IT Elongation, mechanical

Fatigue, mechanical

Sheet materials

Tensile strength

Vickers hardness

Yield strength

(steel sheet contg. ferrite and bainite and plated

steel sheet)

IT Galvanized steel

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(steel sheet contg. ferrite and bainite and plated

steel sheet)

IT 2176433-58-0

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(steel sheet contg. ferrite and bainite and plated

steel sheet)

IT 12427-23-5, Bainite 12427-24-6, Ferrite (ferrous metal component)

12627-33-7, Titanium carbide nitride 12687-87-5, Niobium carbide nitride

RL: TEM (Technical or engineered material use); USES (Uses)

(steel sheet contg. ferrite and bainite and plated

steel sheet)

L12 ANSWER 62 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:227877 CAPLUS Full-text

DOCUMENT NUMBER: 168:225093

TITLE: Low-carbon steel sheet and plated steel sheet for automobile parts

INVENTOR(S): Sano, Kohichi; Uno, Makoto; Nishiyama, Ryoichi;

ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1224 of 1430

PATENT ASSIGNEE(S): Yamaguchi, Yuji; Sugiura, Natsuko; Nakata, Masahiro
SOURCE: Nippon Steel & Sumitomo Metal Corporation, Japan
PCT Int. Appl., 47pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018026016	A1	20180208	WO 2017-JP28481	20170804
JP 6354917	B2	20180711	JP 2017-562104	20170804
TW I649430	B	20190201	TW 2017-126476	20170804
KR 2019016099	A	20190215	KR 2019-7000765	20170804
BR 112019000306	A2	20190416	BR 2019-112019000306	20170804
CN 109642279	A	20190416	CN 2017-80046220	20170804
EP 3495530	A1	20190612	EP 2017-837117	20170804
MX 2019000577	A	20190704	MX 2019-577	20170804
IN 201817050008	A	20190329	IN 2018-17050008	20181231
US 20190241996	A1	20190808	US 2019-16314951	20190103
PRIORITY APPLN. INFO.:			JP 2016-155097	A 20160805
			WO 2017-JP28481	W 20170804

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to a steel sheet having a specific chem. compn. and is provided with a structure represented by in terms of area ratio, 0-30% ferrite and 70-100% bainite. When a crystal grain is defined as a region which is surrounded by grain boundaries having a misorientation of 15° or high and for which the equiv. circle diam. is 0.3 μm or large, the proportion of crystal grains having an intragranular misorientation of 5-14° relative to all of the crystal grains is 20-100% in terms of area ratio. The grain boundary no. d. of a solid soln. of C, or the total grain boundary no. d. of a solid soln. of C and a solid soln. of B is 1 particle/nm² to 4.5 particles/nm² inclusive. The av. particle size of cementite pptd. in the grain boundaries is no larger than 2 μm.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
KAWANO KAORI	2014			WO 2014014120 A1	CAPLUS
KOBAYASHI YUKIKO	2014			WO 2014002941 A1	CAPLUS
OTSUKA KAZUYA	2009			JP 2009019265 A	CAPLUS
SUGIURA NATSUKO	2008			WO 2008056812 A1	CAPLUS
YOKOI TATSUO	2008			WO 2008123366 A1	CAPLUS

IT 2178084-33-6

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(low-carbon steel sheet and plated steel sheet for automobile parts)

RN 2178084-33-6 CAPLUS

CN Iron alloy, base, Fe 89-99, Mn 0.6-2.5, Cu 0-2, Ni 0-2, Si 0-1.7, Cr 0-1, Mo 0-1, Al 0-0.6, C 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 99	7439-89-6
Mn	0.6 - 2.5	7439-96-5
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Si	0 - 1.7	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Al	0 - 0.6	7429-90-5
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST carbon steel sheet plating automobile part
IT Automobile parts
Elongation, mechanical
Galvannealing
Grain size
Hot-dip galvanizing
Microstructure
Phase composition
Plating process
Sheet materials
Tensile strength
Yield strength
(low-carbon steel sheet and plated steel sheet for automobile parts)
IT 2178084-33-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(low-carbon steel sheet and plated steel sheet for automobile parts)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L12 ANSWER 63 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:2019857 CAPLUS Full-text
DOCUMENT NUMBER: 169:78116
TITLE: Effect of the method of steel microalloying by titanium on its absorption rate
AUTHOR(S): Nazyuta, L. Yu.; Orlichenko, M. P.; Kostyrya, I. N.
CORPORATE SOURCE: GVUZ "PGTU", Ukraine
SOURCE: Metallurgicheskaya i Gornorudnaya Promyshlennost (2016), (4), 8-15
CODEN: MGPNAI; ISSN: 0543-5749
PUBLISHER: OOO Ukrmetallurginform "NTA"
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Relevance of titan use as the microalloying element when smelting of high-quality steel is shown. In the conditions of PJSC "Azovstal Iron and Steel Works" dynamics of smelting of titaniferous steel over the last 5 years is analyzed. Basing on the anal. of theor. and exptl. studies, technol. of microalloying by titan of various steel grades, including low-carbon pipe steel (X70-X80), intermediate-carbon constructional (A514B) and low-silicon steel is analyzed (B431). Recovery extent of titan and influence of deoxidn. modes on it are analyzed. It is shown that for the purpose of decrease in waste of titan and increase of qual. indexes of low-carbon steel, its input should be performed after final deoxidn. of metal by aluminum in case of content in metal at least 0,022 % of acidsol. aluminum together with aluminum additive (in case of ratio of aluminum and titan at least 0,8 pieces). In case of prodn. of medium and high carbon steel, content of acid-sol. aluminum during titan introduction should be more than 0,012 %, and ratio of aluminum and calcium at least 1,2 pieces.

IT 52346-86-8P, A514B, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(effect of method of steel microalloying by titanium on its absorption rate)
RN 52346-86-8 CAPLUS
CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	0.70 - 1.00	7439-96-5
Cr	0.40 - 0.65	7440-47-3
Si	0.20 - 0.35	7440-21-3
Mo	0.15 - 0.25	7439-98-7
C	0.12 - 0.21	7440-44-0
V	0.03 - 0.08	7440-62-2
S	0 - 0.04	7704-34-9
P	0 - 0.035	7723-14-0
Ti	0.01 - 0.03	7440-32-6

CC 55-1 (Ferrous Metals and Alloys)
 ST titanium ~~steel~~ microalloying absorption rate
 IT Absorption
 Microalloying
 Smelting
 (effect of method of ~~steel~~ microalloying by titanium on its
 absorption rate)
 IT 52346-86-8P, A514B, preparation 57621-31-5P, X70, preparation
 2229696-68-6P, B431, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (effect of method of ~~steel~~ microalloying by titanium on its
 absorption rate)
 IT 7440-32-6, Titanium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (effect of method of ~~steel~~ microalloying by titanium on its
 absorption rate)

L12 ANSWER 64 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:1596511 CAPLUS Full-text

DOCUMENT NUMBER: 167:461742

TITLE: High strength ~~steel~~ sheet and its manufacture for
 automobile parts

INVENTOR(S): Murata, Tadao; Murakami, Toshio; Kakiuchi, Elijah;
 Otani, Shigeo; Futamura, Yuichi

PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.),
 Japan

SOURCE: PCT Int. Appl., 41pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2017169329	A1	20171005	WO 2017-JP6608	20170222
JP 2017186647	A	20171012	JP 2016-253902	20161227
JP 6762868	B2	20200930		
CN 108779533	A	20181109	CN 2017-80017681	20170222
CN 108779533	B	20201103		
KR 2018125560	A	20181123	KR 2018-7030749	20170222
KR 2184257	B1	20201130		
MX 2018010467	A	20181129	MX 2018-10467	20170222
EP 3438309	A1	20190206	EP 2017-773875	20170222
US 20190071757	A1	20190307	US 2018-16082519	20180905
IN 201847040082	A	20181102	IN 2018-47040082	20181024
PRIORITY APPLN. INFO.:			JP 2016-72740	A 20160331
			JP 2016-253902	A 20161227
			WO 2017-JP6608	W 20170222

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The high-strength ~~steel~~ sheet, characterized in that the component
 compn. thereof includes, in terms of mass%, carbon 0.15-0.35, a total of
 silicon and aluminum 0.5-2.5, manganese 1.0-4.0, phosphorous 0-0.05, and
 sulfur 0-0.01, the remainder comprising iron and unavoidable impurities,
 the ~~steel~~ structure thereof in terms of the ratio of the entire
 structure satisfies a ratio of more than 5 area% to no more than 50 area%
 ferrite, a total of at least 30 area% of tempered martensite and bainite,
 and at least 10 vol% residual austenite, and furthermore has MA, the av.
 circle-equiv. diam. of the MA being 1.0 µm or less, the av.
 circle-equiv. diam. of the residual austenite being 1.0 µm or less, and
 residual austenite having a circle-equiv. diam. of 1.5 µm or greater
 satisfies a vol. ratio of 5% or greater with respect to the total amt. of
 residual austenite.

IT 2135697-12-8P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)

(high strength ~~steel~~ sheet and its manuf. for automobile
 parts)

RN 2135697-12-8 CAPLUS

CN Iron alloy, base, Fe 92-98,Mn 1-4,Al 0-2.5,Si 0-2.5,B 0-1,Cr 0-1,Mo 0-1,Ni 0-1,C 0.2-0.4,Hf 0-0.2,Nb 0-0.2,Ti 0-0.2,V 0-0.2,Cu 0-0.1 (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	92	-	98	7439-89-6
Mn	1	-	4	7439-96-5
Al	0	-	2.5	7429-90-5
Si	0	-	2.5	7440-21-3
B	0	-	1	7440-42-8
Cr	0	-	1	7440-47-3
Mo	0	-	1	7439-98-7
Ni	0	-	1	7440-02-0
C	0.2	-	0.4	7440-44-0
Hf	0	-	0.2	7440-58-6
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
V	0	-	0.2	7440-62-2
Cu	0	-	0.1	7440-50-8

IPCI C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-06 [I]; C22C0038-58 [I]
IPCR C22C0038-00 [I]; C21D0009-48 [I]; C22C0038-06 [I]; C22C0038-58 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST ~~steel~~ sheet strength manuf automobile part
IT Automobile parts
Casting of metals
Cold rolling
Cooling
Elongation, mechanical
Heating
Hot rolling
Melting
Microstructure
Pickling
Quenching (cooling)
Sheet materials
Tensile strength
Yield strength
(high strength ~~steel~~ sheet and its manuf. for automobile parts)
IT Forging
(hot; high strength ~~steel~~ sheet and its manuf. for automobile parts)
IT 2135697~12~8P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high strength ~~steel~~ sheet and its manuf. for automobile parts)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L12 ANSWER 65 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:1052138 CAPLUS Full-text
DOCUMENT NUMBER: 167:166695
TITLE: Formula of ~~steel~~ for military high-pressure gas cylinder
INVENTOR(S): Wu, Chuanmin; Xu, Jinyuan; Xu, Sangbo; Lu, Hongdi
PATENT ASSIGNEE(S): Zhejiang Jindun Firefighting Equipment Co., Ltd.,
Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 7pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
PATENT NO. KIND DATE APPLICATION NO. DATE

CN 106893935 A 20170627 CN 2017-10196443 20170329
PRIORITY APPLN. INFO.: CN 2017-10196443 20170329
AB The compn. of the ~~steel~~ for military high-pressure gas cylinder contains

C 0.30-0.37, Si ≤0.40, Mn 0.60-0.90, P ≤0.020, S ≤0.020, Cr 0.90-1.20, Ni ≤0.3, Mo 0.15-0.30, Cu ≤0.20, Nb+V+Ti+B+Zr ≤0.15wt% and Fe bal. The steel for military high-pressure gas cylinder has higher corrosion resistance, and is practical.

IT 2102689-28-9, Carbon 0.3-0.4, chromium 0.9-1.2, copper 0-0.2, iron bal., manganese 0.6-0.9, molybdenum 0.2-0.3, nickel 0-0.3, niobium 0-0.2, V 0-0.2, Ti 0-0.2, B 0-0.2, Zr 0-0.2, silicon 0-0.4
 RL: TEM (Technical or engineered material use); USES (Uses)
 (formula of steel for military high-pressure gas cylinder)

RN 2102689-28-9 CAPLUS

CN Iron alloy, base, Fe 95-98, Cr 0.9-1.2, Mn 0.6-0.9, C 0.3-0.4, Si 0-0.4, Mo 0.2-0.3, Ni 0-0.3, B 0-0.2, Cu 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	95 - 98	7439-89-6
Cr	0.9 - 1.2	7440-47-3
Mn	0.6 - 0.9	7439-96-5
C	0.3 - 0.4	7440-44-0
Si	0 - 0.4	7440-21-3
Mo	0.2 - 0.3	7439-98-7
Ni	0 - 0.3	7440-02-0
B	0 - 0.2	7440-42-8
Cu	0 - 0.2	7440-50-8
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-04; C22C0038-02; C22C0038-22; C22C0038-20; C22C0038-44; C22C0038-42; C22C0038-24; C22C0038-26; C22C0038-28; C22C0038-32; C22C0038-46; C22C0038-48; C22C0038-50; C22C0038-54

IPCR C22C0038-04 [I]; C22C0038-02 [I]; C22C0038-20 [I]; C22C0038-22 [I]; C22C0038-24 [I]; C22C0038-26 [I]; C22C0038-28 [I]; C22C0038-32 [I]; C22C0038-42 [I]; C22C0038-44 [I]; C22C0038-46 [I]; C22C0038-48 [I]; C22C0038-50 [I]; C22C0038-54 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST military high pressure gas cylinder steel corrosion resistance

IT Cylinders

(gas; formula of steel for military high-pressure gas cylinder)

IT 2102689-28-9, Carbon 0.3-0.4, chromium 0.9-1.2, copper 0-0.2, iron bal., manganese 0.6-0.9, molybdenum 0.2-0.3, nickel 0-0.3, niobium 0-0.2, V 0-0.2, Ti 0-0.2, B 0-0.2, Zr 0-0.2, silicon 0-0.4

RL: TEM (Technical or engineered material use); USES (Uses)
 (formula of steel for military high-pressure gas cylinder)

L12 ANSWER 66 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:1035509 CAPLUS Full-text

DOCUMENT NUMBER: 167:130838

TITLE: Carbon steel strips for reinforcing rubber motor vehicle tires

INVENTOR(S): Verleene, Arnaud

PATENT ASSIGNEE(S): Compagnie Generale des Etablissements Michelin, Fr.; Michelin Recherche et Technique S.A.

SOURCE: PCT Int. Appl., 32pp.; Chemical Indexing Equivalent to 167:130837 (FR)

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2017103516	A1	20170622	WO 2016-FR53485	20161216
FR 3045670	A1	20170623	FR 2015-62493	20151216

PRIORITY APPLN. INFO.: FR 2015-62493 A 20151216

AB A narrow carbon steel strip with a very low carbon content, high

resistance in the cold-worked state, comprises, in wt.: 0.05-0.4% carbon; 0.5-4% manganese, 0.1-2.5% silicon, optionally 0-1.5% aluminum, 0-0.5% of each of B, Cr, Co, Cu, Mo, Ni, Nb, Ti, W, V, and/or Zr, and/or 0-0.05% of each of P, S, N, and/or rare earth metal, the remainder consisting of iron and inevitable impurities. The microstructure of the cold-worked carbon steel is primarily martensitic or ferritic-martensitic. The resistance of the strip is greater than 1200 MPa, and its elongation at break is 1-5%. The carbon steel strips may be used as reinforcement in rubber composites such as for motor vehicle tires.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	+	=====	=====	=====	=====
ARNAUD JEAN-CLAUDE	1992			WO 9214811 A1	CAPLUS
ARNAUD JEAN-CLAUDE	1997			WO 9726379 A1	CAPLUS
KUSINSKI GRZEGORZ J	2004			WO 2004046400 A1	CAPLUS
THOMAS GARETH	1986			WO 8601231 A1	CAPLUS

IT 2101768-32-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; carbon steel strips for reinforcing rubber motor vehicle tires)

RN 2101768-32-3 CAPLUS

CN Iron alloy, base, Fe 86-99, Mn 0.5-4, Si 0.1-2.5, Al 0-1.5, B 0-0.5, Co 0-0.5, Cr 0-0.5, Cu 0-0.5, Mo 0-0.5, Nb 0-0.5, Ni 0-0.5, Ti 0-0.5, V 0-0.5, W 0-0.5, Zr 0-0.5, C 0-0.4 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	86 - 99	7439-89-6
Mn	0.5 - 4	7439-96-5
Si	0.1 - 2.5	7440-21-3
Al	0 - 1.5	7429-90-5
B	0 - 0.5	7440-42-8
Co	0 - 0.5	7440-48-4
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
Nb	0 - 0.5	7440-03-1
Ni	0 - 0.5	7440-02-0
Ti	0 - 0.5	7440-32-6
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0

IPCI C21D0007-10 [I]; B32B0015-06 [I]; C21D0009-34 [I]; C21D0009-52 [I];
D07B0001-06 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-18 [I];
B21B0001-28 [I]; C21D0009-46 [I]

IPCR C21D0007-10 [I]; B21B0001-28 [I]; B32B0015-06 [I]; C21D0009-34 [I];
C21D0009-46 [I]; C21D0009-52 [I]; C22C0038-02 [I]; C22C0038-04 [I];
C22C0038-18 [I]; D07B0001-06 [I]

CC 55-3 (Ferrous Metals and Alloys)

Section cross-reference(s): 39

ST carbon steel strip reinforced rubber tire

IT Tires

(carbon steel strips for reinforcing rubber motor vehicle tires)

IT Synthetic rubber

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(carbon steel-reinforced; carbon steel strips for reinforcing rubber motor vehicle tires)

IT 2101768-32-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; carbon steel strips for reinforcing rubber motor vehicle tires)

ACCESSION NUMBER: 2017:1035507 CAPLUS Full-text
DOCUMENT NUMBER: 167:130837
TITLE: Carbon ~~steel~~ strips for reinforcing rubber motor vehicle tires
INVENTOR(S): Verleene, Arnaud
PATENT ASSIGNEE(S): Compagnie Generale des Etablissements Michelin, Fr.; Michelin Recherche et Technique S.A.
SOURCE: Fr. Demande, 29pp.; Chemical Indexing Equivalent to 167:130838 (WO)
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 3045670	A1	20170623	FR 2015-62493	20151216
WO 2017103516	A1	20170622	WO 2016-FR53485	20161216
PRIORITY APPLN. INFO.:			FR 2015-62493	A 20151216

AB A narrow carbon ~~steel~~ strip with a very low carbon content, high resistance in the cold-worked state, comprises, in wt.: 0.05-0.4% carbon; 0.5-4% manganese, 0.1-2.5% silicon, optionally 0-1.5% aluminum, 0-0.5% of each of B, Cr, Co, Cu, Mo, Ni, Nb, Ti, W, V, and/or Zr, and/or 0-0.05% of each of P, S, N, and/or rare earth metal, the remainder consisting of iron and inevitable impurities. The microstructure of the cold-worked carbon ~~steel~~ is primarily martensitic or ferritic-martensitic. The resistance of the strip is greater than 1200 MPa, and its elongation at break is 1-5%. The carbon ~~steel~~ strips may be used as reinforcement in rubber composites such as for motor vehicle tires.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ARNAUD JEAN-CLAUDE	1992			WO 9214811 A1	CAPLUS
ARNAUD JEAN-CLAUDE	1997			WO 9726379 A1	CAPLUS
KUSINSKI GRZEGORZ J	2004			WO 2004046400 A1	CAPLUS
THOMAS GARETH	1986			WO 8601231 A1	CAPLUS

IT 2101768-32-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; carbon ~~steel~~ strips for reinforcing rubber motor vehicle tires)

RN 2101768-32-3 CAPLUS

CN Iron alloy, base, Fe 86-99, Mn 0.5-4, Si 0.1-2.5, Al 0-1.5, B 0-0.5, Co 0-0.5, Cr 0-0.5, Cu 0-0.5, Mo 0-0.5, Nb 0-0.5, Ni 0-0.5, Ti 0-0.5, V 0-0.5, W 0-0.5, Zr 0-0.5, C 0-0.4 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	86 - 99	7439-89-6
Mn	0.5 - 4	7439-96-5
Si	0.1 - 2.5	7440-21-3
Al	0 - 1.5	7429-90-5
B	0 - 0.5	7440-42-8
Co	0 - 0.5	7440-48-4
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
Nb	0 - 0.5	7440-03-1
Ni	0 - 0.5	7440-02-0
Ti	0 - 0.5	7440-32-6
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0

IPCI C22C0038-04 [I]; B32B0025-04 [I]; B60C0009-18 [I]; B60C0001-00 [I]
IPCR C22C0038-04 [I]; B32B0025-04 [I]; B60C0001-00 [I]; B60C0009-18 [I]

CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 39

ST carbon ~~steel~~ strip reinforced rubber tire

IT Tires
 (carbon ~~steel~~ strips for reinforcing rubber motor vehicle
 tires)
IT Synthetic rubber
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (carbon ~~steel~~-reinforced; carbon ~~steel~~ strips for
 reinforcing rubber motor vehicle tires)
IT 2101768-32-3P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (strips; carbon ~~steel~~ strips for reinforcing rubber motor
 vehicle tires)

L12 ANSWER 68 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:1034863 CAPLUS Full-text
DOCUMENT NUMBER: 167:130836
TITLE: Tire reinforced by a carbon ~~steel~~ strip
INVENTOR(S): Verleene, Arnaud
PATENT ASSIGNEE(S): Compagnie Generale des Etablissements Michelin, Fr.;
 Michelin Recherche et Technique S.A.
SOURCE: Fr. Demande, 29pp.; Chemical Indexing Equivalent to
 167:116100 (WO)
 CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 3045671	A1	20170623	FR 2015-62495	20151216
FR 3045671	B1	20171208		
WO 2017103515	A1	20170622	WO 2016-FR53484	20161216
EP 3390675	A1	20181024	EP 2016-825529	20161216
US 20200290401	A1	20200917	US 2018-16062765	20180615
PRIORITY APPLN. INFO.:			FR 2015-62495	A 20151216
			WO 2016-FR53484	W 20161216

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB A motor vehicle tire is reinforced by at least one carbon ~~steel~~ strip
 that has a low carbon content and high resistance in the cold-worked
 state. The ~~steel~~ comprises (in % by wt.) 0.05-0.4% carbon, 0.5-4%
 manganese, 0.1-2.5% silicon, optionally 0-1.5% aluminum, 0-0.5% of each of
 boron, chromium, cobalt, copper, molybdenum, nickel, niobium, titanium,
 tungsten, vanadium, zirconium, and 0-0.05% of each of phosphorus, sulfur,
 nitrogen or rare earth metal, the remainder consisting of iron and
 inevitable impurities resulting from the process. The microstructure of
 the cold-worked carbon ~~steel~~ is primarily martensitic or
 ferritic-martensitic; the tensile strength of the strip is >1200 MPa, and
 its elongation at break is 1-5%.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ARNAUD JEAN-CLAUDE	1992			WO 9214811 A1	CAPLUS
ARNAUD JEAN-CLAUDE	1997			WO 9726379 A1	CAPLUS
KUSINSKI GRZEGORZ J	2004			WO 2004046400 A1	CAPLUS
OBLATH RICHARD MICHAEL	1985			EP 0157716 A1	
THOMAS GARETH	1986			WO 8601231 A1	CAPLUS

IT 2101768-32-3
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (tire reinforced by carbon ~~steel~~ strip)
RN 2101768-32-3 CAPLUS
CN Iron alloy, base, Fe 86-99,Mn 0.5-4,Si 0.1-2.5,Al 0-1.5,B 0-0.5,Co
 0-0.5,Cr 0-0.5,Cu 0-0.5,Mo 0-0.5,Nb 0-0.5,Ni 0-0.5,Ti 0-0.5,V 0-0.5,W
 0-0.5,Zr 0-0.5,C 0-0.4 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	86 - 99	7439-89-6

Mn	0.5	-	4	7439-96-5
Si	0.1	-	2.5	7440-21-3
Al	0	-	1.5	7429-90-5
B	0	-	0.5	7440-42-8
Co	0	-	0.5	7440-48-4
Cr	0	-	0.5	7440-47-3
Cu	0	-	0.5	7440-50-8
Mo	0	-	0.5	7439-98-7
Nb	0	-	0.5	7440-03-1
Ni	0	-	0.5	7440-02-0
Ti	0	-	0.5	7440-32-6
V	0	-	0.5	7440-62-2
W	0	-	0.5	7440-33-7
Zr	0	-	0.5	7440-67-7
C	0	-	0.4	7440-44-0

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IPCI C22C0038-04 [I]; B32B0025-04 [I]; B60C0009-18 [I]; B60C0001-00 [I]
IPCR C22C0038-04 [I]; B32B0025-04 [I]; B60C0001-00 [I]; B60C0009-18 [I]
CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 39
ST tire reinforced carbon steel strip mech property
IT Microstructure
Tire cords
(tire reinforced by carbon steel strip)
IT 2101768-32-3
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(tire reinforced by carbon steel strip)

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L12 ANSWER 69 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:1034861 CAPLUS Full-text
DOCUMENT NUMBER: 167:116100
TITLE: Tire reinforced by a carbon steel strip
INVENTOR(S): Verleene, Arnaud
PATENT ASSIGNEE(S): Compagnie Generale des Etablissements Michelin, Fr.;
Michelin Recherche et Technique S.A.
SOURCE: PCT Int. Appl., 34pp.; Chemical Indexing Equivalent to
167:130836 (FR)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2017103515	A1	20170622	WO 2016-FR53484	20161216
FR 3045671	A1	20170623	FR 2015-62495	20151216
FR 3045671	B1	20171208		
EP 3390675	A1	20181024	EP 2016-825529	20161216
US 20200290401	A1	20200917	US 2018-16062765	20180615
PRIORITY APPLN. INFO.:			FR 2015-62495	A 20151216
			WO 2016-FR53484	W 20161216

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

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AB Disclosed is a motor vehicle tire reinforced by at least one carbon
steel strip that has a low carbon content and high resistance in the
cold-worked state. The steel comprises (in % by wt.) 0.05% to 0.4%
carbon, 0.5% to 4% manganese, 0.1% to 2.5% silicon, optionally (i) \<1.5%
aluminum, (ii) \<0.5% of each of the metals boron, chromium, cobalt,
copper, molybdenum, nickel, niobium, titanium, tungsten, vanadium,
zirconium, et (iii) \<0.05% of each of the elements phosphorus, sulfur,
nitrogen or rare earth metal, the remainder consisting of iron and
inevitable impurities resulting from the process. The microstructure of
the cold-worked carbon steel is primarily martensitic or
ferritic-martensitic; the tensile strength Rm of the strip is greater than
1200 MPa, and its elongation at break At ranges from 1% to 5%.

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RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ARNAUD JEAN-CLAUDE	1992			WO 9214811 A1	CAPLUS
ARNAUD JEAN-CLAUDE	1997			WO 9726379 A1	CAPLUS

KUSINSKI GRZEGORZ J	2004			WO 2004046400 A1	CAPLUS
OBLATH RICHARD MICHAEL	1985			EP 0157716 A1	
THOMAS GARETH	1986			WO 8601231 A1	CAPLUS

IT 2101768-32-3
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (tire reinforced by carbon steel strip)

RN 2101768-32-3 CAPLUS

CN Iron alloy, base, Fe 86-99, Mn 0.5-4, Si 0.1-2.5, Al 0-1.5, B 0-0.5, Co 0-0.5, Cr 0-0.5, Cu 0-0.5, Mo 0-0.5, Nb 0-0.5, Ni 0-0.5, Ti 0-0.5, V 0-0.5, W 0-0.5, Zr 0-0.5, C 0-0.4 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Fe	86 - 99	7439-89-6
Mn	0.5 - 4	7439-96-5
Si	0.1 - 2.5	7440-21-3
Al	0 - 1.5	7429-90-5
B	0 - 0.5	7440-42-8
Co	0 - 0.5	7440-48-4
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
Nb	0 - 0.5	7440-03-1
Ni	0 - 0.5	7440-02-0
Ti	0 - 0.5	7440-32-6
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0

IPCI C21D0007-10 [I]; B60C0009-00 [I]; B21B0001-28 [I]; B32B0015-06 [I];
 C21D0009-34 [I]; C21D0009-46 [I]; C21D0009-52 [I]; D07B0001-06 [I];
 C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-18 [I]

IPCR C21D0007-10 [I]; B21B0001-28 [I]; B32B0015-06 [I]; B60C0009-00 [I];
 C21D0009-34 [I]; C21D0009-46 [I]; C21D0009-52 [I]; C22C0038-02 [I];
 C22C0038-04 [I]; C22C0038-18 [I]; D07B0001-06 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST tire reinforced carbon steel strip mech property

IT Mechanical properties
 Microstructure
 Tire cords
 (tire reinforced by carbon steel strip)

IT 2101768-32-3
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (tire reinforced by carbon steel strip)

L12 ANSWER 70 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:848898 CAPLUS Full-text

TITLE: Contact Fatigue Resistance of Carburized Gears from Chromium-Nickel Steels

AUTHOR(S): Rudenko, S. P.; Val'ko, A. L.

CORPORATE SOURCE: United Institute for Mechanical Engineering, National Academy of Sciences of Belarus, Minsk, Belarus

SOURCE: Metal Science and Heat Treatment (2017), 59(1-2), 60-64
 CODEN: MHTRAN; ISSN: 0026-0673

DIGITAL OBJECT ID: 10.1007/s11041-017-0103-3

PUBLISHER: Springer

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB The contact fatigue resistance of carburized gears produced from chromium-nickel steels is studied. The curves of deep contact fatigue of the material of the gears are plotted in terms of the criterion of equality of the characteristics of diffusion layers. An expression for ultimate deep contact fatigue resistance of carburized gears is derived.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
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=====+=====+=====+=====+=====+=====
Anon |         |         |         | A A Susin, Thermoche |
Anon |         |         |         | A I Petrusevich, Con |
Anon |         |         |         | A N Utkina, Yu Yu Ch |
Anon |         |         |         | B A Balashov, R R Ga |
Anon |         |         |         | B V Gold, E P Obolen |
Anon |         |         |         | E B Vulgakov (ed.), |
Anon |         |         |         | E I Tesker, Advanced |
Anon |         |         |         | N M Ryzhov, "Technol |
Anon |         |         |         | S P Rudenko and A L |
Anon |         |         |         | S P Rudenko, "A stud |
Anon |         |         |         | S P Rudenko, "Comput |
Anon |         |         |         | S P Rudenko, "Fatigu |
Anon |         |         |         | S P Rudenko, A L Val |
Anon |         |         |         | V E Antonyuk, B V Iv |
Anon |         |         |         | Yu S Eliseev, V V Kr |

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IT INDEXING IN PROGRESS

IT 37312-00-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)

(contact fatigue resistance of carburized gears from chromium-nickel
steels)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST chromium nickel steel carburized gear contact fatigue resistance

IT Diffusion

Fatigue resistance

Gears

Microhardness

Microstructure

(contact fatigue resistance of carburized gears from chromium-nickel
steels)

IT 12681-03-7 12742-08-4 37312-00-8 39411-21-7

RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)

(contact fatigue resistance of carburized gears from chromium-nickel
steels)

L12 ANSWER 71 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:342418 CAPLUS Full-text

DOCUMENT NUMBER: 166:297159

TITLE: Method for manufacturing steel plate with aluminum
or aluminum alloy coating by hot stamping

INVENTOR(S): Liu, Xin; Hong, Zhenjun; Tan, Ning; Jin, Xinyan; Liu,
Junxiang; Hong, Jiayao

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 15pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 106466697	A	20170301	CN 2016-10664566	20160812
CN 106466697	B	20200131		

PRIORITY APPLN. INFO.: CN 2016-10664566 20160812

AB The invention discloses a manuf. method of ~~steel~~ plate, which comprises the following steps: blanking the ~~steel~~ plate with aluminum or aluminum alloy coating by blanking or laser cutting, induction heating, hot stamping in die, and cooling. The temp. and time of heating are detd. by the thickness of ~~steel~~ plate. The components of the ~~steel~~ plate is as follows: C 0.08-0.8%, Si 0.05-1.0%, Mn 0.1-5%, P<0.3%, S<0.1%, Al<0.3%, Ti<0.5%, B 0.0005-0.1%, Cr 0.01-3%, and balance of Fe and inevitable impurities. The coating comprises alloy layer, aluminum enriched intermetallic compd. layer, intermediate layer and surface layer. The components of the alloy layer is Si 0-6%, Fe 75-96%, Al 2-12%; the components of the aluminum enriched intermetallic compd. layer is Si 0-2%, Fe 30-50%, Al 40-60%; the components of the intermediate layer is Si 2-6%, Fe 50-65%, Al 20-35%; and the components of the surface layer is Si 2-6%, Fe 50-65%, Al 20-35%. The product has high strength, complex shape, good formability, high precision, and small springback, which can be used for automobile parts such as bumper, pillar reinforced plate, floor inside passage, and stiffening beam, etc..

IT 2067242-22-0P, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)

RN 2067242-22-0 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B21D0053-88; C22C0038-02; C22C0038-04; C22C0038-06; C22C0038-32; C22C0038-60; C23C0002-12; C23C0002-40

IPCR B21D0053-88 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-32 [I]; C22C0038-60 [I]; C23C0002-12 [I]; C23C0002-40 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST hot stamping aluminum alloy ~~steel~~ plate coating manuf

IT Coating materials

Cooling

Induction heating

Industrial manufacturing

Laser cutting

Quenching (cooling)

Transmissions (mechanical)

(method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)

IT Metalworking

(stamping, hot; method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)

IT 2067242-22-0P, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal. 2087430-40-6P, Aluminum 2-12, iron

75-96, silicon 0-6 2087430-41-7P, Aluminum 40-60, iron 30-50, silicon 0-2 2087430-42-8P, Aluminum 20-35, iron 50-65, silicon 2-6
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)
 IT 2087430-39-3, Iron 0-4, silicon 5-11, Aluminum bal.
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)
 IT 7429-90-5, Aluminum, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy coating by hot stamping)

L12 ANSWER 72 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:227313 CAPLUS Full-text
 DOCUMENT NUMBER: 166:249360
 TITLE: Hot rolled ~~steel~~ sheet and its manufacture for automobile parts
 INVENTOR(S): Sakakibara, Chikami; Sugiura, Natsuko; Tanaka, Yasuaki; Tanei, Hiroshi; Fujii, Takashi; Yokoyama, Takashi
 PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2017031454	A	20170209	JP 2015-150831	20150730
JP 6620446	B2	20191218		
WO 2017022025	A1	20170209	WO 2015-JP71845	20150731
PRIORITY APPLN. INFO.:			JP 2015-150831	TO 20150730

AB To provide hot-rolled ~~steel~~ plate excellent in pickling property and without an increase in equipment cost, generation of internal oxide layer of a high strength hot rolled ~~steel~~ sheet contg. relatively large amts. of Si and Mn is suppressed, and method for manufg. thereof. Hot-rolled ~~steel~~ plate comprises C: 0.04-0.6%, Si: 0.01-3%, Mn: 0.1-5%, P: 0.04% or less, S: 0.05% or less, Al: 0.001-2%, N: 0.01% or less, O: 0.01% or less, one or more of Sb, Sn and Te: total amt. of 0.01-0.3% and remainder of Fe and unavoidable impurities, and has thickness of the internal oxide layer of 5 µm or less, a concd. layer of Sb, Sn and Te as an upper layer of the internal oxide layer, and has mech. properties with a tensile strength of 590 MPa or more.

IT 2079034-18-5P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (high strength hot rolled ~~steel~~ sheet and its manuf. for automobile parts)

RN 2079034-18-5 CAPLUS

CN Iron alloy, base, Fe 80-100, Mn 0.1-5, Si 0-3, Al 0-2, Cr 0-2, Cu 0-2, Ni 0-2, Mo 0-1, C 0-0.6, Nb 0-0.3, Sb 0-0.3, Sn 0-0.3, Te 0-0.3, Ti 0-0.3, V 0-0.3, B 0-0.1
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Cr	0 - 2	7440-47-3
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Mo	0 - 1	7439-98-7
C	0 - 0.6	7440-44-0

Nb	0	-	0.3	7440-03-1
Sb	0	-	0.3	7440-36-0
Sn	0	-	0.3	7440-31-5
Te	0	-	0.3	13494-80-9
Ti	0	-	0.3	7440-32-6
V	0	-	0.3	7440-62-2
B	0	-	0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C21D0009-46 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-60 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST hot rolled ~~steel~~ sheet manuf automobile part

IT Automobile parts

Casting of metals

Hot rolling

Melting

Microstructure

Pickling

Sheet materials

Tensile strength

(high strength hot rolled ~~steel~~ sheet and its manuf. for
automobile parts)

IT 2079034-18-5P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)

(high strength hot rolled ~~steel~~ sheet and its manuf. for
automobile parts)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 73 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:100416 CAPLUS Full-text

DOCUMENT NUMBER: 166:179501

TITLE: ~~Steel~~ welding part with aluminum or aluminum alloy
plating layer and manufacture method thereof

INVENTOR(S): Pan, Hua; Su, Yongchao; Lei, Ming; Shi, Lei; Jiang,
Haomin

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 8pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 106334875	A	20170118	CN 2016-10953787	20161027
WO 2018077067	A1	20180503	WO 2017-CN106516	20171017
MX 2019004121	A	20190606	MX 2019-4121	20171017
KR 2019069471	A	20190619	KR 2019-7013481	20171017
EP 3533558	A1	20190904	EP 2017-864438	20171017
JP 2019535894	T	20191212	JP 2019-520992	20171017
US 20200038998	A1	20200206	US 2019-16339215	20190403
IN 201917015151	A	20190719	IN 2019-17015151	20190415

PRIORITY APPLN. INFO.: CN 2016-10953787 A 20161027
WO 2017-CN106516 W 20171017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention discloses a ~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof. The ~~steel~~ welding part with aluminum or aluminum alloy plating layer comprises a ~~steel~~ substrate and a plating layer, the plating layer comprises an intermetallic compd. alloy layer in contact with the substrate, and a metal alloy layer thereon; which is characterized in that on at least one of the plated surfaces of the weld blank, the plating layer located in the area to be welded of the weld blank is completely removed, and the end face of the welding blank part plating layer removed the region to be welded is perpendicular to the surface of the substrate which is parallel to weld seam to form an included angle β , and the included angle $\beta = 0-80^\circ$. A method of manufg. ~~steel~~ welding part with aluminum or aluminum alloy plating layer is characterized in that it

includes the steps of: obtaining weld blank by welding according to the requirements of ~~steel~~ welding part with aluminum or aluminum alloy plating layer, welding the area to be welded of the weld blank where the plating layer has been completely removed to form a welded joint; obtaining a part by hot stamping, selecting a cooling rate which is greater than the crit. transformation speed of the matrix martensite quenching, and cooling. This invention ensures tensile strength, elongation rate and corrosion resistance of welding joint after hot stamping.

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
RN 2067242-22-0 CAPLUS
CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B23K0026-32; C22C0038-04; C22C0038-02; C22C0038-06; C22C0038-14; C22C0038-18; C23C0002-12; B23K0103-20
IPCR B23K0026-32 [I]; B23K0103-20 [N]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-14 [I]; C22C0038-18 [I]; C23C0002-12 [I]
CC 56-9 (Nonferrous Metals and Alloys)
Section cross-reference(s): 47
ST ~~steel~~ welding part aluminum alloy plating layer
IT Metalworking
(stamping, hot; ~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
IT Corrosion-resistant materials
Industrial manufacturing
Joints, mechanical
Laser ablation
Laser welding
Plating process
Welding apparatus
Welds
(~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
IT 12003-42-8 12004-62-5 12043-58-2
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
IT 1273096-81-3P, Aluminum alloy
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(~~steel~~ welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

L12 ANSWER 74 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:24305 CAPLUS Full-text

DOCUMENT NUMBER: 166:137133

TITLE: High-strength carbon ~~steel~~ plate having excellent impact resistance and its production for automobile parts

INVENTOR(S): Okamoto, Riki; Toyota, Takeshi; Isogai, Eiji

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2017002333	A	20170105	JP 2015-114026	20150604
JP 6540245	B2	20190710		

PRIORITY APPLN. INFO.: JP 2015-114026 20150604

AB The invention provides a high-strength ~~steel~~ plate which has tensile strength of 400 N/mm², excellent shape freezing property, and appropriate yield point elongation, and a method of manufg. thereof. The high-strength ~~steel~~ plate having excellent shape freezing property contains in mass%, C: 0.03-0.35%, Si: 0.01-2.00%, Mn: 0.3-4.0%, P: 0.001-0.100%, S: 0.0005-0.05%, N: 0.0005%-0.010%, Al: 0.01-2.00%, and balance being Fe and inevitable impurities, and includes a metal structure contg. an unrecrystd. ferrite phase at an area ratio of 2-35%. The yield point elongation of the ~~steel~~ plate is 4-10%.

IT 2034133-38-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength carbon ~~steel~~ plate having excellent impact resistance and its prodn. for automobile parts)

RN 2034133-38-3 CAPLUS

CN Iron alloy, base, Fe 80-100, Mn 0.3-4, Cr 0-3, Cu 0-3, Ni 0-3, Al 0-2, Si 0-2, Mo 0-1, V 0-0.5, C 0-0.4, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Mn	0.3 - 4	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
Mo	0 - 1	7439-98-7
V	0 - 0.5	7440-62-2
C	0 - 0.4	7440-44-0
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I];
C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST carbon ~~steel~~ plate strength impact resistance prodn automobile part

IT Annealing

Automobile parts

Cold rolling

Cooling

Elongation at break

Heating

Hot rolling

Hot-dip galvanizing

Impact strength

Microstructure
Pickling
Tensile strength
Yield strength
(high-strength carbon steel plate having excellent impact resistance and its prodn. for automobile parts)

IT 2034133-38-3P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength carbon steel plate having excellent impact resistance and its prodn. for automobile parts)

L12 ANSWER 75 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:24289 CAPLUS Full-text
DOCUMENT NUMBER: 166:148201
TITLE: High-strength carbon steel sheet with excellent processability and its manufacture for automobile parts
INVENTOR(S): Okamoto, Riki; Toyota, Takeshi; Isogai, Eiji
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2017002332	A	20170105	JP 2015-114025	20150604
JP 6620431	B2	20191218		

PRIORITY APPLN. INFO.: JP 2015-114025 20150604
AB The high-strength steel sheet with excellent processability, contains in mass%, carbon:0.03-0.35%, silicon:0.01-2.00%, manganese:0.3-4.0%, phosphorus:0.001-0.100%, sulfur:0.0005-0.05%, nitrogen: 0.0005%-0.010%, aluminum: 0.01-2.00%, and balance being iron and inevitable impurities and includes a metal structure contg. an unrecrystd. ferrite phase at an area ratio of 2-20%. The ratio (yield stress (N/mm²)/tensile strength (Nmm²) of the yield stress with respect to the tensile strength is 0.75 or more. The product (yield stress(N/mm²)×elongation (%)) of yield stress and elongation is 12000 or more. The invention provides a high-strength steel sheet which has tensile strength of 400 N/mm², excellent processability, high elongation rate and high yield stress.

IT 2034133-38-3P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high-strength carbon steel sheet with excellent processability and its manuf. for automobile parts)

RN 2034133-38-3 CAPLUS
CN Iron alloy, base, Fe 80-100,Mn 0.3-4,Cr 0-3,Cu 0-3,Ni 0-3,Al 0-2,Si 0-2,Mo 0-1,V 0-0.5,C 0-0.4,Nb 0-0.3,Ti 0-0.3,B 0-0.1,P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Mn	0.3 - 4	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
Mo	0 - 1	7439-98-7
V	0 - 0.5	7440-62-2
C	0 - 0.4	7440-44-0
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C21D0009-46 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-60 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST high strength ~~steel~~ sheet processability manuf automobile part
IT Metalworking
(capability; high-strength carbon ~~steel~~ sheet with excellent
processability and its manuf. for automobile parts)
IT Alloying
Annealing
Automobile parts
Casting of metals
Cold rolling
Cooling
Elongation, mechanical
Hot rolling
Hot-dip galvanizing
Microstructure
Phase composition
Pickling
Sheet materials
Tensile strength
Yield strength
(high-strength carbon ~~steel~~ sheet with excellent
processability and its manuf. for automobile parts)
IT 2034133-38-3P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(high-strength carbon ~~steel~~ sheet with excellent
processability and its manuf. for automobile parts)

L12 ANSWER 76 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:2049760 CAPLUS Full-text
DOCUMENT NUMBER: 167:333389
TITLE: Method for hot forming a coated metal part and formed
part
INVENTOR(S): Verloop, Willem Cornelis; Van Genderen, Marc Jacco;
Van Tol, Ronald Theodoor; Hensen, Guido Cornelis;
Loiseaux, Jenny
PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.
SOURCE: U.S., No pp. given
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 9127329	B2	20150908	US 2013-13818041	20130220
US 20130153094	A1	20130620		
WO 2012028224	A1	20120308	WO 2011-EP3601	20110719
PRIORITY APPLN. INFO.:			EP 2010-9041	A 20100831
			WO 2011-EP3601	W 20110719

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB A method for manufg. a coated part having very high mech. properties using
hot forming techniques. The method includes: -providing an annealed
~~steel~~ strip or blank or pre-shaped part that was coated with a metal or
metal alloy before the annealing -if a strip is provided, cutting a blank
from the strip before or after the annealing -optionally forming a
pre-shaped part from the blank -heating the blank or preshaped part to a
temp. of 500° C. at an av. heating rate of 16° C./s or more
-further heating the blank or pre-shaped part to a temp. between 700 and
1000° C. -hot forming the blank or preshaped part into a hot formed
part -hardening the hot formed part. A method for manufg. a coated
~~steel~~ strip, blank or pre-shaped part, and a coated ~~steel~~ strip, blank
or part and a hot formed part.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	2009			DE 102008022400 A1	CAPLUS
Anon	2009			WO 2009021743 A1	CAPLUS
Anon	2009			WO 2009096351 A1	CAPLUS

Anon	2010			WO 2010005121 A1	CAPLUS
Anon	2010			WO 2010069588 A1	CAPLUS
Anon	2010			WO 2010085983 A1	CAPLUS
Anon	2010			EP 2177641 A1	CAPLUS
Anon	2002			"Glossary of Metallu	
Anon	2011			International Search	
Brandstatter	2011			US 20110045316 A1	CAPLUS
Hensen	2011			US 20110236719 A1	CAPLUS
Maki	2011			US 20110174418 A1	CAPLUS
Mehler	1962			US 3056694 A	CAPLUS
Oh	2008			US 20080286603 A1	CAPLUS
Thirion	2012			US 20120085467 A1	CAPLUS
Toki	2011			US 20110048585 A1	CAPLUS
Vlot	2010			US 20100026048 A1	CAPLUS

IT 1360605-36-2
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manuf. coated ~~steel~~ parts by hot forming)

RN 1360605-36-2 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
V	0 - 0.1	7440-62-2

IPCI C21D0008-02 [I]; C21D0009-46 [I]; C23C0002-06 [I]; C23C0002-40 [I]; B32B0015-01 [I]; C21D0001-673 [I]; C21D0008-04 [I]; C21D0009-48 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C23C0010-28 [I]; C23C0010-60 [I]; C21D0008-02 [I]; B32B0015-01 [I]

IPCR C21D0008-02 [I]; B32B0015-01 [I]; C21D0001-673 [I]; C21D0008-04 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C23C0002-06 [I]; C23C0002-40 [I]; C23C0010-28 [I]; C23C0010-60 [I]

NCL 001/001.000; 148/533.000; 148/330.000

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~ strip coating hot deformation

IT Plastic deformation

(hot; method for manuf. coated ~~steel~~ parts by hot forming)

IT 1360605-37-3

RL: TEM (Technical or engineered material use); USES (Uses)

(coating; method for manuf. coated ~~steel~~ parts by hot forming)

IT 1360605-36-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(method for manuf. coated ~~steel~~ parts by hot forming)

L12 ANSWER 77 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1997298 CAPLUS Full-text

DOCUMENT NUMBER: 167:180612

TITLE: Coated ~~steel~~ strips, methods of making the same, methods of using the same, stamping blanks prepared from the same, stamped products prepared from the same, and articles of manufacture which contain such a stamped product

INVENTOR(S): Drillet, Pascal; Spehner, Dominique; Kefferstein, Ronald

PATENT ASSIGNEE(S): Arcelormittal France, Fr.

SOURCE: U.S. Pat. Appl. Publ., No pp. given

CODEN: USXXCO

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20110165436	A1	20110707	US 2011-447777	20110318
WO 2008053273	A1	20080508	WO 2006-IB4019	20061030
EP 3290199	A1	20180307	EP 2017-192410	20061030
EP 3290199	B1	20190821		
EP 3290200	A1	20180307	EP 2017-192418	20061030
EP 3587104	A1	20200101	EP 2019-185736	20061030
EP 3587105	A1	20200101	EP 2019-185743	20061030
US 20130029172	A1	20130131	US 2012-13621015	20120915
US 9708683	B2	20170718		
US 20170260603	A1	20170914	US 2017-15606770	20170526
US 10550447	B2	20200204		
US 20190271055	A1	20190905	US 2019-16413774	20190516
US 10590507	B2	20200317		
US 20190271056	A1	20190905	US 2019-16413799	20190516
US 20190271057	A1	20190905	US 2019-16413825	20190516
US 20190271058	A1	20190905	US 2019-16414022	20190516
US 10597747	B2	20200324		
US 20190276912	A1	20190912	US 2019-16413729	20190516
US 10577674	B2	20200303		

PRIORITY APPLN. INFO.:

WO 2006-IB4019	W	20061030
EP 2006-842403	A3	20061030
EP 2017-192410	A3	20061030
US 2011-447777	A3	20110318
US 2012-13621015	A1	20120915
US 2017-15606770	A1	20170526

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Coated ~~steel~~ having a well defined and uniform thickness is useful and advantageous for prepg. products by hot stamping. Products prepd. by hot stamping such a ~~steel~~ are particularly advantageous when subjected to a subsequent spot welding step.

IT 1022915-01-0
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum coated ~~steel~~ strips stamping blanks and articles of manuf. which contain such a stamped product)

RN 1022915-01-0 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

INCL 428653000; 072342100; 072047000

IPCI B32B0015-01 [I]; B21D0022-00 [I]; C21D0009-46 [I]

IPCR B32B0015-01 [I]; B21D0022-00 [I]; C21D0009-46 [I]

NCL 428/653.000; 072/047.000; 072/342.100

CC 55-11 (Ferrous Metals and Alloys)

ST aluminum coated ~~steel~~ strip stamping article spot welding

IT Metalworking

(stamping; aluminum coated ~~steel~~ strips stamping blanks and articles of manuf. which contain such a stamped product)

IT 7429-90-5, Aluminum, uses 952598-91-3, Aluminum 87-90, iron 2-4, silicon 8-11

RL: NUU (Other use, unclassified); USES (Uses)

(aluminum coated ~~steel~~ strips stamping blanks and articles of manuf. which contain such a stamped product)

IT 10232915-01-0
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum coated ~~steel~~ strips stamping blanks and articles of
manuf. which contain such a stamped product)

L12 ANSWER 78 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1976821 CAPLUS Full-text
DOCUMENT NUMBER: 167:35538
TITLE: Low temperature hardenable ~~steels~~ with excellent
machinability
INVENTOR(S): Valls, Isaac
PATENT ASSIGNEE(S): Valls Besitz GmbH, Germany
SOURCE: U.S. Pat. Appl. Publ., No pp. given
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20150118098	A1	20150430	US 2014-14399289	20141106
US 10077490	B2	20180918		
EP 2662462	A1	20131113	EP 2012-166948	20120507
WO 2013167580	A1	20131114	WO 2013-EP59471	20130507
US 20180363110	A1	20181220	US 2018-16052826	20180802
PRIORITY APPLN. INFO.:			EP 2012-166948	A 20120507
			WO 2013-EP59471	W 20130507
			US 2014-14399289	A1 20141106

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to the application of at least partially
bainitic or interstitial martensitic heat treatments on ~~steels~~, often
tool ~~steels~~ or ~~steels~~ that can be used for tools. The first tranche
of the heat treatment implying austenitization is applied so that the
~~steel~~ presents a low enough hardness to allow for advantageous shape
modification, often through machining. Thus a ~~steel~~ product is obtained
which can be shaped with ease and whose hardness can be raised to a higher
working hardness with a simple heat treatment at low temp. (below
austenitization temp.).

IT 1478046-17-1 1478046-18-2 1478046-23-9
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(low temp. hardenable tool ~~steels~~ with excellent
machinability)
RN 1478046-17-1 CAPLUS
CN Iron alloy, base, Fe 37-100, Mo 0-10, W 0-10, Co 0-6, Ni 0-6, V 0-4, Cr 0-3, Hf
0-3, Mn 0-3, Ta 0-3, Ti 0-3, Zr 0-3, Al 0-2.5, Cu 0-2, Nb 0-1.5, Si 0-1.4, N 0-1, B
0-0.6, C 0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	37 - 100	7439-89-6
Mo	0 - 10	7439-98-7
W	0 - 10	7440-33-7
Co	0 - 6	7440-48-4
Ni	0 - 6	7440-02-0
V	0 - 4	7440-62-2
Cr	0 - 3	7440-47-3
Hf	0 - 3	7440-58-6
Mn	0 - 3	7439-96-5
Ta	0 - 3	7440-25-7
Ti	0 - 3	7440-32-6
Zr	0 - 3	7440-67-7
Al	0 - 2.5	7429-90-5
Cu	0 - 2	7440-50-8
Nb	0 - 1.5	7440-03-1
Si	0 - 1.4	7440-21-3
N	0 - 1	17778-88-0
B	0 - 0.6	7440-42-8
C	0.2	7440-44-0

RN 1478046-18-2 CAPLUS
 CN Iron alloy, base, Fe 13-100, Mo 0-15, W 0-15, Cr 0-14, V 0-12, Zr 0-12, Co 0-6, Ni 0-6, Hf 0-4, Nb 0-4, Ta 0-4, Ti 0-4, C 0.5-3, Mn 0-3, Al 0-2.5, N 0-2.2, B 0-2, Cu 0-2, Si 0-2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	13 - 100	7439-89-6
Mo	0 - 15	7439-98-7
W	0 - 15	7440-33-7
Cr	0 - 14	7440-47-3
V	0 - 12	7440-62-2
Zr	0 - 12	7440-67-7
Co	0 - 6	7440-48-4
Ni	0 - 6	7440-02-0
Hf	0 - 4	7440-58-6
Nb	0 - 4	7440-03-1
Ta	0 - 4	7440-25-7
Ti	0 - 4	7440-32-6
C	0.5 - 3	7440-44-0
Mn	0 - 3	7439-96-5
Al	0 - 2.5	7429-90-5
N	0 - 2.2	17778-88-0
B	0 - 2	7440-42-8
Cu	0 - 2	7440-50-8
Si	0 - 2	7440-21-3

RN 1478046-23-9 CAPLUS
 CN Iron alloy, base, Fe 44-99, W 0-8, Co 0-6, Mo 0-6, Ni 0-6, Cr 0-4, V 0-4, Mn 0.2-3, Si 0.2-2.8, Al 0-2.5, Cu 0-2, Hf 0-2, Nb 0-2, Ta 0-2, Ti 0-2, Zr 0-2, C 0.2-0.9, B 0-0.6, N 0-0.6 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	44 - 99	7439-89-6
W	0 - 8	7440-33-7
Co	0 - 6	7440-48-4
Mo	0 - 6	7439-98-7
Ni	0 - 6	7440-02-0
Cr	0 - 4	7440-47-3
V	0 - 4	7440-62-2
Mn	0.2 - 3	7439-96-5
Si	0.2 - 2.8	7440-21-3
Al	0 - 2.5	7429-90-5
Cu	0 - 2	7440-50-8
Hf	0 - 2	7440-58-6
Nb	0 - 2	7440-03-1
Ta	0 - 2	7440-25-7
Ti	0 - 2	7440-32-6
Zr	0 - 2	7440-67-7
C	0.2 - 0.9	7440-44-0
B	0 - 0.6	7440-42-8
N	0 - 0.6	17778-88-0

INCL 420102000; 420111000; 420110000; 420109000; 420107000; 420106000;
 420101000

IPCI C22C0038-58 [I]; C22C0038-50 [I]; C22C0038-52 [I]; C22C0038-38 [I];
 C22C0038-32 [I]; C22C0038-02 [I]; C22C0038-28 [I]; C22C0038-26 [I];
 C22C0038-24 [I]; C22C0038-22 [I]; C22C0038-04 [I]; C22C0038-44 [I];
 C22C0038-30 [I]; C22C0038-12 [I]; C22C0038-22 [I]; C22C0038-44 [I];
 C22C0038-58 [I]; C21D0009-00 [I]; C22C0038-18 [I]; C21D0006-00 [I];
 C21D0001-30 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-24 [I];
 C22C0038-26 [I]; C22C0038-28 [I]; C22C0038-30 [I]; C22C0038-32 [I];
 C22C0038-38 [I]; C22C0038-50 [I]; C22C0038-52 [I]; C22C0038-00 [I];
 C22C0038-08 [I]; C22C0038-14 [I]
 IPCR C22C0038-58 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-22 [I];
 C22C0038-24 [I]; C22C0038-26 [I]; C22C0038-28 [I]; C22C0038-30 [I];
 C22C0038-32 [I]; C22C0038-38 [I]; C22C0038-44 [I]; C22C0038-50 [I];
 C22C0038-52 [I]; C22C0038-12 [I]; C21D0001-30 [I]; C21D0006-00 [I];

C21D0009-00 [I]; C22C0038-00 [I]; C22C0038-08 [I]; C22C0038-14 [I];
 C22C0038-18 [I]
 NCL 420/102.000; 420/101.000; 420/106.000; 420/107.000; 420/109.000;
 420/110.000; 420/111.000
 CC 55-3 (Ferrous Metals and Alloys)
 ST tool steel heat treatment hardness
 IT Dies
 Heat treatment
 Injection molding apparatus
 Tools
 (low temp. hardenable tool steels with excellent
 machinability)
 IT 12173-93-2, Martensite, formation (nonpreparative) 12427-23-5, Bainite
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (low temp. hardenable tool steels with excellent
 machinability)
 IT 1478046-17-1 1478046-18-2 1478046-23-9
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (low temp. hardenable tool steels with excellent
 machinability)

L12 ANSWER 79 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2016:1976461 CAPLUS Full-text
 DOCUMENT NUMBER: 167:35564
 TITLE: Tough bainitic heat treatments on steels for tooling
 INVENTOR(S): Valls Angles, Isaac
 PATENT ASSIGNEE(S): Vallsbesitz GmbH, Germany
 SOURCE: U.S. Pat. Appl. Publ., No pp. given
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20150114525	A1	20150430	US 2014-14399239	20141106
EP 2662460	A1	20131113	EP 2012-166949	20120507
WO 2013167628	A1	20131114	WO 2013-EP59542	20130507
PRIORITY APPLN. INFO.:			EP 2012-166949	A 20120507
			WO 2013-EP59542	W 20130507

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a method that has been developed to obtain good toughness and homogeneous properties through heavy sections in tool steels or likely highly alloyed steels. The microstructure attained is mostly bainitic. The method is esp. good for hot work tool steels in applications demanding heavy sections and very high toughness. The method consists on the application of a low temp. bainitic transformation to tool steels presenting a low enough martensite transformation temp. (Ms). Addnl. or alternatively cementite is replaced from the bainite by other finer carbides, mainly mixed carbides contg. elements with stronger affinity for carbon than iron. The method is esp. simple if applied to steels with high contents of Si or Al (>1.3% and >0.4% resp.) where cementite growth is impaired. The method works also well for low cost plastic injection molding and structural steels. Even some higher alloyed tool steels can benefit from, the present method.

IT 1480228-53-2
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (tough bainitic heat treatment for tool steels)

RN 1480228-53-2 CAPLUS

CN Iron alloy, base, Fe 0-100, Mo 0-15, W 0-15, Cr 0-14, V 0-12, Zr 0-12, Co 0-6, Ni 0-6, Hf 0-4, Nb 0-4, Ta 0-4, Ti 0-4, C 0.5-3, Mn 0-3, Al 0-2.5, N 0-2.2, B 0-2, Cu 0-2, Si 0-2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	0 - 100	7439-89-6
Mo	0 - 15	7439-98-7
W	0 - 15	7440-33-7

Cr	0	-	14	7440-47-3
V	0	-	12	7440-62-2
Zr	0	-	12	7440-67-7
Co	0	-	6	7440-48-4
Ni	0	-	6	7440-02-0
Hf	0	-	4	7440-58-6
Nb	0	-	4	7440-03-1
Ta	0	-	4	7440-25-7
Ti	0	-	4	7440-32-6
C	0.5	-	3	7440-44-0
Mn	0	-	3	7439-96-5
Al	0	-	2.5	7429-90-5
N	0	-	2.2	17778-88-0
B	0	-	2	7440-42-8
Cu	0	-	2	7440-50-8
Si	0	-	2	7440-21-3

INCL 148612000; 148660000; 148663000; 148621000
 IPCI C22C0038-58 [I]; C21D0001-00 [I]; C22C0038-54 [I]; C22C0038-50 [I];
 C22C0038-48 [I]; C22C0038-46 [I]; C22C0038-44 [I]; C22C0038-38 [I];
 C22C0038-28 [I]; C22C0038-26 [I]; C22C0038-24 [I]; C22C0038-22 [I];
 C22C0038-04 [I]; C22C0038-02 [I]; C21D0006-00 [I]
 IPCR C22C0038-58 [I]; C21D0001-00 [I]; C21D0006-00 [I]; C22C0038-02 [I];
 C22C0038-04 [I]; C22C0038-22 [I]; C22C0038-24 [I]; C22C0038-26 [I];
 C22C0038-28 [I]; C22C0038-38 [I]; C22C0038-44 [I]; C22C0038-46 [I];
 C22C0038-48 [I]; C22C0038-50 [I]; C22C0038-54 [I]
 NCL 148/612.000; 148/621.000; 148/660.000; 148/663.000
 CC 55-5 (Ferrous Metals and Alloys)
 ST tool steel bainite heat treatment hardness
 IT Heat treatment
 Mechanical hardness
 Tools
 (tough bainitic heat treatment for tool steels)
 IT 12427-23-5, Bainite
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (tough bainitic heat treatment for tool steels)
 IT 1480228-53-2
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (tough bainitic heat treatment for tool steels)

L12 ANSWER 80 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2016:1976375 CAPLUS Full-text
 DOCUMENT NUMBER: 167:35563
 TITLE: High thermal diffusivity, high toughness and low crack
 risk during heat treatment tool steel
 INVENTOR(S): Angles, Isaac Valls
 PATENT ASSIGNEE(S): Rovalma, S.A., Spain
 SOURCE: U.S. Pat. Appl. Publ., No pp. given
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20160010168	A1	20160114	US 2015-14771976	20150901
WO 2014131907	A1	20140904	WO 2014-EP54010	20140228
PRIORITY APPLN. INFO.:			EP 2013-382069	A 20130301
			WO 2014-EP54010	W 20140228

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to a tool steel as described in
 WO2012095532A1 or WO2010112319A1 and its heat treatment where high levels
 of thermal diffusivity, mech. resistance, wear resistance and/or toughness
 are attained while having a low cracking risk during the heat treatment.
 It is achieved by austenitizing at a temp., normally above AC3, cooling to
 an intermediate temp. below AC1 and above the temp. where bainitic (and
 alike) transformation occurs and finally quenching with a severe cooling
 media to a temp. below the bainitic transformation nose. Final
 microstructure is mainly composed of martensite and/or lower bainite,
 which will generally be afterwards tempered.

IT 1625647-86-0
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (tool ~~steel~~; high thermal diffusivity, high toughness and low
 crack risk during heat treatment tool ~~steel~~)

RN 1625647-86-0 CAPLUS

CN Iron alloy, base, Fe 36-100, Mo 0-10, W 0-10, Co 0-6, Ni 0-6, V 0-4, Cr 0-3, Hf
 0-3, Mn 0-3, Ta 0-3, Zr 0-3, Al 0-2.5, Cu 0-2, Ti 0-2, C 0.2-1.9, Nb 0-1.5, Si
 0-1.4, N 0-1, B 0-0.6 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	36 - 100	7439-89-6
Mo	0 - 10	7439-98-7
W	0 - 10	7440-33-7
Co	0 - 6	7440-48-4
Ni	0 - 6	7440-02-0
V	0 - 4	7440-62-2
Cr	0 - 3	7440-47-3
Hf	0 - 3	7440-58-6
Mn	0 - 3	7439-96-5
Ta	0 - 3	7440-25-7
Zr	0 - 3	7440-67-7
Al	0 - 2.5	7429-90-5
Cu	0 - 2	7440-50-8
Ti	0 - 2	7440-32-6
C	0.2 - 1.9	7440-44-0
Nb	0 - 1.5	7440-03-1
Si	0 - 1.4	7440-21-3
N	0 - 1	17778-88-0
B	0 - 0.6	7440-42-8

IPCI C21D0001-84 [I]; C22C0038-46 [I]; C22C0038-44 [I]; C22C0038-00 [I];
 C22C0038-06 [I]; C22C0038-04 [I]; C22C0038-02 [I]; C21D0006-00 [I];
 C22C0038-42 [I]

IPCR C21D0001-84 [I]; C21D0006-00 [I]; C22C0038-00 [I]; C22C0038-02 [I];
 C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-42 [I]; C22C0038-44 [I];
 C22C0038-46 [I]

CC 55-5 (Ferrous Metals and Alloys)

ST tool ~~steel~~ thermal diffusivity toughness crack heat treatment

IT Structural phase transition
 (ferrite-perlite; high thermal diffusivity, high toughness and low
 crack risk during heat treatment tool ~~steel~~)

IT Fracture toughness
 Heat treatment
 Mechanical hardness
 Microstructure
 Quenching (cooling)
 Tempering
 Thermal conductivity
 Wear resistance
 (high thermal diffusivity, high toughness and low crack risk during
 heat treatment tool ~~steel~~)

IT 12173-93-2, Martensite, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (high thermal diffusivity, high toughness and low crack risk during
 heat treatment tool ~~steel~~)

IT 1625647-86-0
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (tool ~~steel~~; high thermal diffusivity, high toughness and low
 crack risk during heat treatment tool ~~steel~~)

L12 ANSWER 81 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1809235 CAPLUS Full-text

DOCUMENT NUMBER: 165:597854

TITLE: High-strength ~~steel~~ plate and its manufacturing method

INVENTOR(S): Okamoto, Riki; Ishida, Yoshinari; Suwa, Yoshihiro;
 Yokoyama, Takafumi

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1249 of 1430

SOURCE: PCT Int. Appl., 67pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016178430	A1	20161110	WO 2016-JP63660	20160506
TW I606123	B	20171121	TW 2016-114295	20160506
KR 2017138545	A	20171215	KR 2017-7033656	20160506
KR 1987573	B1	20190610		
CN 107614722	A	20180119	CN 2016-80026467	20160506
CN 107614722	B	20190827		
EP 3293279	A1	20180314	EP 2016-789566	20160506
EP 3293279	B1	20200325		
MX 2017014094	A	20180316	MX 2017-14094	20160506
BR 112017023881	A2	20180717	BR 2017-112017023881	20160506
JP 6471800	B2	20190220	JP 2017-516621	20160506
ES 2784699	T3	20200930	ES 2016-789566	20160506
US 20180148809	A1	20180531	US 2017-15571619	20171103
IN 201717039616	A	20171222	IN 2017-17039616	20171107
PRIORITY APPLN. INFO.:			JP 2015-95157	A 20150507
			JP 2015-95158	A 20150507
			WO 2016-JP63660	W 20160506

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to a high-strength steel plate that has a predetd. chem. compn. and has a microstructure represented by, in terms of area%, at least 5% martensite, at least 20% ferrite and, 5% or less pearlite. The av. grain diam. of the martensite is an equiv. circle diam. of 4 μ m or less. Among multiple martensite grains on grain boundary triple points of a matrix phase, at least one of the grain boundaries that connect adjacent two grain boundary triple points that are structured by the martensite grains and the matrix crystal grains has convex curvature toward the outside with respect to a line segment that connects the two grain boundary triple points. Furthermore, if the martensite grain is referred to as a bulging martensite grain when the martensite grain is on one grain boundary triple point of the matrix phase, the ratio of the no. of bulging martensite grains to the no. of multiple martensite grains on the grain boundary triple points of the matrix phase is at least 70%. The area ratio represented by VM/A0 is at least 1.0, where VM represents the total area of the multiple martensite grains on the grain boundary triple points of the matrix phase, and A0 represents the total area of the polygons structured by line segments connecting any two adjacent grain boundary triple points of multiple martensite grains.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AKAMIZU HIROSHI	2004			JP 2004308002 A	CAPLUS
IBANO AKIRA	2010			JP 2010285636 A	CAPLUS
MINAMI HIDEKAZU	2015			WO 2015015738 A1	CAPLUS
OKAMOTO TSUTOMU	2014			JP 2014173151 A	CAPLUS
ONO YOSHIHIKO	2010			WO 2010087529 A1	CAPLUS
TAKASHIMA KATSUTOSHI	2015			WO 2015019558 A1	CAPLUS

IT 2034133-38-3

RL: TEM (Technical or engineered material use); USES (Uses)
(high-strength steel plate and its manufg. method)

RN 2034133-38-3 CAPLUS

CN Iron alloy, base, Fe 80-100, Mn 0.3-4, Cr 0-3, Cu 0-3, Ni 0-3, Al 0-2, Si 0-2, Mo 0-1, V 0-0.5, C 0-0.4, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Mn	0.3 - 4	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3

Mo	0	-	1	7439-98-7
V	0	-	0.5	7440-62-2
C	0	-	0.4	7440-44-0
Nb	0	-	0.3	7440-03-1
Ti	0	-	0.3	7440-32-6
B	0	-	0.1	7440-42-8
P	0	-	0.1	7723-14-0

IPCI C22C0038-00 [I]; C21D0009-46 [I]; C22C0018-00 [I]; C22C0038-60 [I]
 IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0018-00 [I]; C22C0038-60 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 ST ~~steel~~ plate martensite ferrite pearlite microstructure manufg method
 IT Annealing
 Automobile parts
 Cooling
 Elongation at break
 Grain boundaries
 Heating
 Microstructure
 Particle size
 Rolling (metals)
 Tensile strength
 (high-strength ~~steel~~ plate and its manufg. method)
 IT 15099-26-0, Argon (3+), uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (high-strength ~~steel~~ plate and its manufg. method)
 IT 12173-93-2, Martensite, uses 12427-24-6, Ferrite (ferrous metal
 component) 12427-27-9, Pearlite 2034133-38-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (high-strength ~~steel~~ plate and its manufg. method)

L12 ANSWER 82 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1777903 CAPLUS Full-text

DOCUMENT NUMBER: 165:562899

TITLE: Composition and manufacture of high-strength cold rolled ~~steel~~ plate with excellent workability and weldability

INVENTOR(S): Okamoto, Isamu; Yokoyama, Takashi

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016188395	A	20161104	JP 2015-68084	20150330
JP 6492869	B2	20190403		

PRIORITY APPLN. INFO.: JP 2015-68084 20150330

AB The present invention provides a high strength cold rolled ~~steel~~ plate with excellent weldability and workability, and a strength of 400 N/mm2 or more with high processability and yield stress, and its manufg. method. The high strength cold rolled ~~steel~~ plate contains C: 0.03%-0.35%, Si: 0.01%-2.00%, Mn: 0.3%-4.0%, P: 0.001%-0.100%, S: 0.0005%-0.05%, N: 0.0005%-0.010%, Al: 0.01%-2.00%, and the balance being Fe and inevitable impurities. The metal structure contains an unrecrystd. ferrite phase at an area ratio of more than 2% and less than 20%, and martensite phase and tempered martensite phase in an amt. of more than 5% and less than 60% in total. The yield ratio YR that is the ratio of the yield stress to the tensile strength is 0.7 or more, and the product of the yield stress and the elongation is 13000 or more.

IT 2034133-38-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(compn. and manuf. of high-strength cold rolled ~~steel~~ plate with excellent workability and weldability)

RN 2034133-38-3 CAPLUS

CN Iron alloy, base, Fe 80-100, Mn 0.3-4, Cr 0-3, Cu 0-3, Ni 0-3, Al 0-2, Si 0-2, Mo 0-1, V 0-0.5, C 0-0.4, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	80 - 100	7439-89-6
Mn	0.3 - 4	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
Mo	0 - 1	7439-98-7
V	0 - 0.5	7440-62-2
C	0 - 0.4	7440-44-0
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C21D0009-46 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-60 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST cold rolled ~~steel~~ plate manuf strength workability weldability

IT Metalworking
(capability; compn. and manuf. of high-strength cold rolled
~~steel~~ plate with excellent workability and weldability)

IT Alloying
Annealing
Casting of metals
Cooling
Elongation at break
Hot rolling
Hot-dip galvanizing
Microstructure
Pickling
Recrystallization
Tensile strength
Weldability
Yield strength
(compn. and manuf. of high-strength cold rolled ~~steel~~ plate
with excellent workability and weldability)

IT 2034133-38-3P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(compn. and manuf. of high-strength cold rolled ~~steel~~ plate
with excellent workability and weldability)

L12 ANSWER 83 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1770673 CAPLUS Full-text

DOCUMENT NUMBER: 165:549448

TITLE: Production of hot or cold strips from ~~steel~~ having
high copper content

INVENTOR(S): Redenius, Alexander; Evertz, Thomas; Palzer, Peter

PATENT ASSIGNEE(S): Salzgitter Flachstahl GmbH, Germany

SOURCE: PCT Int. Appl., 23pp.; Chemical Indexing Equivalent to
165:549447 (DE)
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2016174020	A1	20161103	WO 2016-EP59266	20160426
DE 102015106780	A1	20161103	DE 2015-102015106780	20150430

PRIORITY APPLN. INFO.: DE 2015-102015106780 A 20150430

AB A hot or cold strip of ~~steel~~ with high copper content, is manufd. by:
melting a ~~steel~~ melt contg. (in wt.%) 0-0.4% C, 0-3% Mn, 0-2% Al, 0-2%
Si, more than 0.8% Cu, 0-0.2% P, 0-0.05% S, and 0-0.3% N, with optional
addn. of Sn, Ni, Cr, V, Nb, Ti, Mo, W, B, Co, Sb and/or Zr, the remainder
being iron and unavoidable impurities; casting the melt under an atm.

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having an oxygen content <10 vol.%, by a near-net-shape casting method, in particular horizontal strip casting or vertical casting according to the two-roll method, into a pre-strip having a thickness in of 1-30 mm; cooling the cast pre-strip at a cooling rate ≥ 100 K/s at the actively cooled strip surface until forming a rigid boundary layer.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
FANG YUAN	2014			US 20140366602 A1	
GUELTON NICOLAS PATRICE	2004			EP 1466024 A1	CAPLUS
IKI HIROSHI	2000			JP 2000045045 A	CAPLUS
IUNG THIERRY	2001			EP 1072689 A1	CAPLUS
MARUYAMA NAOKI	2005			JP 2005036271 A	CAPLUS
MIZOGUCHI TOSHIAKI NIPP	1995			EP 0641867 A1	CAPLUS
UENISHI AKIHIRO	2000			EP 0969112 A1	CAPLUS
YAMAKAWA TSUNAHIRO	1992			US 5098489 A	CAPLUS
IT 2031158-69-5P					
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)					
(strips; prodn. of hot or cold strips from ~~steel~~ having high copper content)					
RN 2031158-69-5	CAPLUS				
CN	Iron alloy, base, Fe 68-99, Cu 0.8-5, Cr 0-4, Co 0-3, Mn 0-3, Mo 0-3, W 0-3, Al 0-2, Ni 0-2, Si 0-2, Nb 0-0.9, Ti 0-0.9, V 0-0.9, Sn 0-0.5, Zr 0-0.5, C 0-0.4, B 0-0.3, N 0-0.3, P 0-0.2 (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	68 - 99	7439-89-6
Cu	0.8 - 5	7440-50-8
Cr	0 - 4	7440-47-3
Co	0 - 3	7440-48-4
Mn	0 - 3	7439-96-5
Mo	0 - 3	7439-98-7
W	0 - 3	7440-33-7
Al	0 - 2	7429-90-5
Ni	0 - 2	7440-02-0
Si	0 - 2	7440-21-3
Nb	0 - 0.9	7440-03-1
Ti	0 - 0.9	7440-32-6
V	0 - 0.9	7440-62-2
Sn	0 - 0.5	7440-31-5
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0
B	0 - 0.3	7440-42-8
N	0 - 0.3	17778-88-0
P	0 - 0.2	7723-14-0

IPCI C22C0038-00 [I]; B22D0011-00 [I]; B22D0011-06 [I]; B22D0011-106 [I]; B22D0011-124 [I]; B22D0011-14 [I]; B22D0011-22 [I]; B22D0015-00 [I]; B22D0037-00 [I]; C21D0006-00 [I]; C21D0008-02 [I]; C21D0001-26 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-16 [I]; B22D0011-112 [I]; C21D0006-02 [I]

IPCR C22C0038-00 [I]; B22D0011-00 [I]; B22D0011-06 [I]; B22D0011-106 [I]; B22D0011-112 [I]; B22D0011-124 [I]; B22D0011-14 [I]; B22D0011-22 [I]; B22D0015-00 [I]; B22D0037-00 [I]; C21D0001-26 [I]; C21D0006-00 [I]; C21D0006-02 [I]; C21D0008-02 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-16 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST hot cold strip ~~steel~~ copper casting cooling

IT Annealing
Casting of metals
Cooling
Hot rolling
(prodn. of hot or cold strips from ~~steel~~ having high copper content)

IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)

(casting atm.; prodn. of hot or cold strips from steel having high copper content)
IT 2031158-68-4P 2031158-69-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from steel having high copper content)

L12 ANSWER 84 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:1770568 CAPLUS Full-text
DOCUMENT NUMBER: 165:549447
TITLE: Production of hot or cold strips from steel having high copper content
INVENTOR(S): Redenius, Alexander; Evertz, Thomas; Palzer, Peter
PATENT ASSIGNEE(S): Salzgitter Flachstahl GmbH, Germany
SOURCE: Ger. Offen., 9pp.; Chemical Indexing Equivalent to 165:549448 (WO)
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102015106780	A1	20161103	DE 2015-102015106780	20150430
WO 2016174020	A1	20161103	WO 2016-EP59266	20160426
PRIORITY APPLN. INFO.:			DE 2015-102015106780 A	20150430

AB A hot or cold strip of steel with high copper content, is manufd. by: melting a steel melt contg. (in wt.%) 0-0.4% C, 0-3% Mn, 0-2% Al, 0-2% Si, more than 0.8% Cu, 0-0.2% P, 0-0.05% S, and 0-0.3% N, with optional addn. of Sn, Ni, Cr, V, Nb, Ti, Mo, W, B, Co, Sb and/or Zr, the remainder being iron and unavoidable impurities; casting the melt under an atm. having an oxygen content <10 vol.%, by a near-net-shape casting method, in particular horizontal strip casting or vertical casting according to the two-roll method, into a pre-strip having a thickness in of 1-30 mm; cooling the cast pre-strip at a cooling rate ≥ 100 K/s at the actively cooled strip surface until forming a rigid boundary layer.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				DE 112013001434 T5	CAPLUS
Anon				WO 2015003755 A1	CAPLUS
Anon				EP 2546368 A1	CAPLUS
Anon				DE 60306365 T2	
Anon	2013			M Bausch et al:Ultra	

IT 2031158-69-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from steel having high copper content)

RN 2031158-69-5 CAPLUS

CN Iron alloy, base, Fe 68-99, Cu 0.8-5, Cr 0-4, Co 0-3, Mn 0-3, Mo 0-3, W 0-3, Al 0-2, Ni 0-2, Si 0-2, Nb 0-0.9, Ti 0-0.9, V 0-0.9, Sn 0-0.5, Zr 0-0.5, C 0-0.4, B 0-0.3, N 0-0.3, P 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	68 - 99	7439-89-6
Cu	0.8 - 5	7440-50-8
Cr	0 - 4	7440-47-3
Co	0 - 3	7440-48-4
Mn	0 - 3	7439-96-5
Mo	0 - 3	7439-98-7
W	0 - 3	7440-33-7
Al	0 - 2	7429-90-5
Ni	0 - 2	7440-02-0
Si	0 - 2	7440-21-3
Nb	0 - 0.9	7440-03-1
Ti	0 - 0.9	7440-32-6

V	0	-	0.9	7440-62-2
Sn	0	-	0.5	7440-31-5
Zr	0	-	0.5	7440-67-7
C	0	-	0.4	7440-44-0
B	0	-	0.3	7440-42-8
N	0	-	0.3	17778-88-0
P	0	-	0.2	7723-14-0

IPCI C22C0038-04 [I]; C22C0038-16 [I]; C21D0008-00 [I]; B22D0011-06 [I];
 B22D0011-116 [I]; B22D0011-12 [I]; C22C0111-00 [I]
 IPCR C22C0038-04 [I]; B22D0011-06 [I]; B22D0011-116 [I]; B22D0011-12 [I];
 C21D0008-00 [I]; C22C0038-16 [I]; C22C0111-00 [N]
 CC 55-3 (Ferrous Metals and Alloys)
 ST hot cold strip ~~steel~~ copper casting cooling
 IT Annealing
 Casting of metals
 Cooling
 Hot rolling
 (prodn. of hot or cold strips from ~~steel~~ having high copper content)
 IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses
 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen,
 uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (casting atm.; prodn. of hot or cold strips from ~~steel~~ having high copper content)
 IT 2031158-68-4P ~~2031158-69-5P~~
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (strips; prodn. of hot or cold strips from ~~steel~~ having high copper content)

L12 ANSWER 85 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1617614 CAPLUS Full-text

DOCUMENT NUMBER: 165:466273

TITLE: Composition and manufacture of carbon ~~steel~~ sheet
 suitable for hot stamping, and hot stamping molded parts

INVENTOR(S): Azuma, Masafumi; Suwa, Yoshihiro; Kondo, Yusuke; Sato,
 Koichi

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: PCT Int. Appl., 49pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016158961	A1	20161006	WO 2016-JP60145	20160329
CA 2979978	A1	20161006	CA 2016-2979978	20160329
KR 2017122823	A	20171106	KR 2017-7027982	20160329
KR 2000863	B1	20190716		
CN 107427889	A	20171201	CN 2016-80017529	20160329
CN 107427889	B	20191025		
MX 2017012377	A	20171214	MX 2017-12377	20160329
EP 3278895	A1	20180207	EP 2016-772842	20160329
EP 3278895	B1	20200311		
BR 112017020165	A2	20180605	BR 2017-112017020165	20160329
RU 2683397	C1	20190328	RU 2017-135379	20160329
JP 6515356	B2	20190522	JP 2017-510030	20160329
ES 2781465	T3	20200902	ES 2016-772842	20160329
TW I597370	B	20170901	TW 2016-110064	20160330
US 20180044754	A1	20180215	US 2017-15559731	20170919
IN 201717033300	A	20171201	IN 2017-17033300	20170920

PRIORITY APPLN. INFO.: JP 2015-72280 A 20150331
 WO 2016-JP60145 W 20160329

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A ~~steel~~ sheet for hot stamping contains, in percentage by wt., C:

0.100%-0.600%, Si: 0.50%-3.00%, Mn: 1.20%-4.00%, Ti: 0.005%-0.100%, B:

0.0005%-0.100%, P: 0.100% or less, S: 0.0001%-0.0100%, Al: 0.005%-1.000%, ArcelorMittal Ex. 2001

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and N: 0.100% or less, with the remainder comprising Fe and impurities.
The steel sheet surface roughness is such that Rz > 2.5 µm, and the
surface is coated with 50 mg/m2-1,500 mg/m2 of oil coated thereon.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1997			JP 976004 A	
HAYASHI KUNIO	2012			WO 2012053636 A1	CAPLUS
KAWASAKI KAORU	2011			WO 2011158818 A1	CAPLUS
KOJIMA TAKESHI	2014			JP 2014159624 A	CAPLUS
KUSUMI KAZUHISA	2008			JP 2008240046 A	CAPLUS
SETO KAZUHIRO	2010			JP 2010174302 A	CAPLUS

IT 2015959-64-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(compn. and manuf. of carbon steel sheet suitable for hot
stamping, and hot stamping molded parts)

RN 2015959-64-3 CAPLUS

CN Iron alloy, base, Fe 83-98,Mn 1.2-4,Si 0.5-3,Cr 0-2,Cu 0-2,Mo 0-2,Ni
0-2,Al 0-1,C 0.1-0.6,B 0-0.1,Nb 0-0.1,P 0-0.1,Ti 0-0.1,V 0-0.1,W 0-0.1
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	83 - 98	7439-89-6
Mn	1.2 - 4	7439-96-5
Si	0.5 - 3	7440-21-3
Cr	0 - 2	7440-47-3
Cu	0 - 2	7440-50-8
Mo	0 - 2	7439-98-7
Ni	0 - 2	7440-02-0
Al	0 - 1	7429-90-5
C	0.1 - 0.6	7440-44-0
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
Ti	0 - 0.1	7440-32-6
V	0 - 0.1	7440-62-2
W	0 - 0.1	7440-33-7

IPCI B21D0022-20 [I]; B21D0024-00 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-14 [I]; C22C0038-58 [I]; C23F0011-00 [I]; C23G0001-08 [I];
IPCR B21D0022-20 [I]; B21D0024-00 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-14 [I]; C22C0038-58 [I]; C23F0011-00 [I]; C23G0001-08 [I];

CC 55-3 (Ferrous Metals and Alloys)

ST carbon steel sheet manuf hot stamping molded part

IT Adhesion, physical

Annealing

Casting of metals

Cold rolling

Hot rolling

Lubrication

Pickling

Scale (deposits)

Sheet materials

Surface roughness

Tensile strength

(compn. and manuf. of carbon steel sheet suitable for hot
stamping, and hot stamping molded parts)

IT Metalworking

(stamping, hot; compn. and manuf. of carbon steel sheet
suitable for hot stamping, and hot stamping molded parts)

IT 2015959-64-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(compn. and manuf. of carbon steel sheet suitable for hot
stamping, and hot stamping molded parts)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

ACCESSION NUMBER: 2016:1459241 CAPLUS Full-text
 DOCUMENT NUMBER: 165:355921
 TITLE: High-strength high-ductility steel sheet for automobile body
 INVENTOR(S): Otani, Shigeo; Murakami, Toshio
 PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.; Chemical Indexing Equivalent to 165:355914 (WO)
 CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016160467	A	20160905	JP 2015-38856	20150227
JP 6348435	B2	20180627		
WO 2016136625	A1	20160901	WO 2016-JP54887	20160219

PRIORITY APPLN. INFO.: JP 2015-38856 A 20150227

AB The steel comprises C: 0.40 - 0.60%, Si+Al: 0.5 - 2.0%, Mn: 1.0 - 4.0%, P: 0 - 0.05%, S: As with 0 - 0.01%, the remainder consists of the iron and the inevitable impurity, steel organization, in the area ratio for all organization, retained austenite 20 - 40%, ferrite with 2 - 20%, the remainder consists of above 1 or 2 kinds of the bainite, the martensite, the tempering bainite, and the tempering martensite, in regard to the carbon concn. in the aforementioned retained austenite, that av. carbon concn. 0.9 - 1.2 mass %, std. deviation of the carbon concn. distribution 0.29 mass % above, that carbon concn. 1.5 mass % the high strength high ductility which in the area ratio the territory above for all organization is 3.0% or more.

IT 1995867-40-7
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (high-strength high-ductility steel sheet for automobile body)

RN 1995867-40-7 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.4-0.6, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.4 - 0.6	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N];
 C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST steel sheet strength ductility automobile body

IT Automobile bodies
 Elongation at break
 Microstructure
 Phase composition
 Sheet materials
 Tensile strength

Yield strength
(high-strength high-ductility ~~steel~~ sheet for automobile
body)
IT 1995867-40-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high-strength high-ductility ~~steel~~ sheet for automobile
body)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L12 ANSWER 87 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:1459216 CAPLUS Full-text
DOCUMENT NUMBER: 165:355920
TITLE: High-strength high-ductility ~~steel~~ sheet for
automobile body
INVENTOR(S): Otani, Shigeo; Murakami, Toshio
PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.; Chemical Indexing
Equivalent to 165:355916 (WO)
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016160468	A	20160905	JP 2015-38857	20150227
JP 6348436	B2	20180627		
WO 2016136627	A1	20160901	WO 2016-JP54890	20160219
PRIORITY APPLN. INFO.:			JP 2015-38857	A 20150227

AB The present invention relates to a high-strength and highly-ductile
~~steel~~ sheet comprises: a compn. contg. C, (Si+Al), Mn, P, and S in
specific amts., with the remainder comprising iron and unavoidable
impurities; and a structure contg. residual austenite in a specific area
ratio, with the remainder comprising at least one of bainite, martensite,
tempered bainite, and tempered martensite. The carbon is present in the
residual austenite at a specific concn. and concn. distribution, and
regions having a carbon concn. of at least 1.5 mass% constitute at least
2.0% of the total structure.

IT 1995867-40-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high-strength high-ductility ~~steel~~ sheet for automobile
body)
RN 1995867-40-7 CAPLUS
CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo
0-1, Ni 0-1, C 0.4-0.6, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.4 - 0.6	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N];
C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~ sheet strength ductility automobile body

IT Automobile bodies

Elongation at break

Microstructure

Sheet materials

Tensile strength

(high-strength high-ductility ~~steel~~ sheet for automobile body)

IT 1995867-40-7

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(high-strength high-ductility ~~steel~~ sheet for automobile body)

L12 ANSWER 88 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1441448 CAPLUS Full-text

DOCUMENT NUMBER: 165:355916

TITLE: High-strength high-ductility ~~steel~~ sheet for automobile body

INVENTOR(S): Otani, Shigeo; Murakami, Toshio

PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.), Japan

SOURCE: PCT Int. Appl., 28pp.; Chemical Indexing Equivalent to 165:355920 (JP)
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016136627	A1	20160901	WO 2016-JP54890	20160219
JP 2016160468	A	20160905	JP 2015-38857	20150227
JP 6348436	B2	20180627		

PRIORITY APPLN. INFO.: JP 2015-38857 A 20150227

AB The present invention relates to a high-strength and highly-ductile ~~steel~~ sheet comprises: a compn. contg. C, (Si+Al), Mn, P, and S in specific amts., with the remainder comprising iron and unavoidable impurities; and a structure contg. residual austenite in a specific area ratio, with the remainder comprising at least one of bainite, martensite, tempered bainite, and tempered martensite. The carbon is present in the residual austenite at a specific concn. and concn. distribution, and regions having a carbon concn. of at least 1.5 mass% constitute at least 2.0% of the total structure.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AKAMIZU HIROSHI	2005			JP 2005336526 A	CAPLUS
Anon	1996			JP 83720 A	
HAYASHI KOTARO	2014			JP 2014025091 A	CAPLUS
KINO NOBUO	2001			JP 2001330101 A	CAPLUS
KUROKAWA SHINPEI	2013			JP 2013159802 A	CAPLUS
SHIBAIRI KOSUKE	2013			JP 2013204093 A	CAPLUS
SUZUKI TAKESHI	2010			JP 2010222671 A	CAPLUS
SUZUKI TAKESHI	2013			JP 2013036087 A	CAPLUS

IT 1995867-40-7

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(high-strength high-ductility ~~steel~~ sheet for automobile body)

RN 1995867-40-7 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.4-0.6, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====

Fe	92	-	98	7439-89-6
Mn	1	-	4	7439-96-5
Al	0	-	2	7429-90-5
Si	0	-	2	7440-21-3
B	0	-	1	7440-42-8
Cr	0	-	1	7440-47-3
Cu	0	-	1	7440-50-8
Mo	0	-	1	7439-98-7
Ni	0	-	1	7440-02-0
C	0.4	-	0.6	7440-44-0
Hf	0	-	0.2	7440-58-6
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
V	0	-	0.2	7440-62-2
Zr	0	-	0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]
 IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~ sheet strength ductility automobile body

IT Automobile bodies

Elongation at break

Microstructure

Sheet materials

Tensile strength

(high-strength high-ductility ~~steel~~ sheet for automobile body)

IT 1995867-40~7

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(high-strength high-ductility ~~steel~~ sheet for automobile body)

L12 ANSWER 89 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1441302 CAPLUS Full-text

DOCUMENT NUMBER: 165:355914

TITLE: High-strength high-ductility ~~steel~~ sheet for automobile body

INVENTOR(S): Otani, Shigeo; Murakami, Toshio

PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.), Japan

SOURCE: PCT Int. Appl., 27pp.; Chemical Indexing Equivalent to 165:355921 (JP)
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016136625	A1	20160901	WO 2016-JP54887	20160219
JP 2016160467	A	20160905	JP 2015-38856	20150227
JP 6348435	B2	20180627		

PRIORITY APPLN. INFO.: JP 2015-38856 A 20150227

AB The ~~steel~~ sheet comprising a compn. contg. C, (Si+Al), Mn, P, and S in specific amts., with the remainder comprising iron and unavoidable impurities; and a structure contg. residual austenite and ferrite in a specific area ratio. Carbon is present in the residual austenite at a specific concn. and concn. distribution, and regions having a carbon concn. of at least 1.5 mass% constitute at least 3.0% of the total structure.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
HATAKE HIDEO	2011			JP 2011219859 A	CAPLUS
HATAKE HIDEO	2012			JP 2012240095 A	CAPLUS
KAKIUCHI ELIJAH	2013			JP 2013181184 A	CAPLUS
MURAKAMI TOSHIO	2012			JP 2012122130 A	CAPLUS
SATO KOICHI	2013			WO 2013047808 A1	CAPLUS
WAKITA MASAYUKI	2007			JP 2007023339 A	CAPLUS

YOSHIDA MITSURU | 2012 | | | JP 2012251201 A | CAPLUS
IT 1995867-40-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high-strength high-ductility steel sheet for automobile
body)
RN 1995867-40-7 CAPLUS
CN Iron alloy, base, Fe 92-98,Mn 1-4,Al 0-2,Si 0-2,B 0-1,Cr 0-1,Cu 0-1,Mo
0-1,Ni 0-1,C 0.4-0.6,Hf 0-0.2,Nb 0-0.2,Ti 0-0.2,V 0-0.2,Zr 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.4 - 0.6	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]
IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-06 [I]; C22C0038-58 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST steel sheet strength ductility automobile body
IT Automobile bodies
Elongation at break
Microstructure
Phase composition
Sheet materials
Tensile strength
Yield strength
(high-strength high-ductility steel sheet for automobile
body)
IT 1995867-40-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high-strength high-ductility steel sheet for automobile
body)

L12 ANSWER 90 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:1420548 CAPLUS Full-text
DOCUMENT NUMBER: 165:369451
TITLE: Anti-bacterial stainless steel
INVENTOR(S): Zhu, Hongyan
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 5pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 105908085	A	20160831	CN 2016-10462806	20160622
PRIORITY APPLN. INFO.:			CN 2016-10462806	20160622

AB The present invention discloses an anti-bacterial stainless steel,
comprising the following chem. compns.: nickel 0.30-0.50wt%, manganese
0.80-1.40wt%, silicon 0.20-0.34wt%, carbon 0.14-0.18wt%, boron
0.02-0.06wt%, phosphorus 0.01-0.02wt%, sulfur 0.015-0.025wt%, erbium
0.08-0.1wt%, vanadium 0.06-0.2wt% , thulium 0.2-0.3wt%, molybdenum
0.02-0.08wt%, titanium 0.08-0.1wt%, niobium 0.02-0.04wt%, rubidium

0.06~0.2wt%, thorium 0.08-0.1wt%, chromium and copper 0.06-0.08wt%, and iron as balance, wherein, the chromium content is 5~7 times of copper content. The anti-bacteria stainless steel provided by the present invention has excellent anti-bacterial property. The anti-bacterial effect of antibacterial stainless steel is relevant with the ratio of chromium and copper content, and when chromium content is 5-7 times of copper content, the antibacterial effect reaches the best.

IT 1998722-49-8, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B 0-0.1, Er 0.1, V 0.1-0.2, Tm 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th 0.1, Cr 0-0.1, Cu 0-0.1, Fe bal.

RL: TEM (Technical or engineered material use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(anti-bacterial stainless steel)

RN 1998722-49-8 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 0.8-1.4, Ni 0.3-0.5, Si 0.2-0.3, Tm 0.2-0.3, C 0.1-0.2, Rb 0.1-0.2, V 0.1-0.2, Er 0.1, Th 0.1, Ti 0.1, B 0-0.1, Cr 0-0.1, Cu 0-0.1, Mo 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	96 - 98	7439-89-6
Mn	0.8 - 1.4	7439-96-5
Ni	0.3 - 0.5	7440-02-0
Si	0.2 - 0.3	7440-21-3
Tm	0.2 - 0.3	7440-30-4
C	0.1 - 0.2	7440-44-0
Rb	0.1 - 0.2	7440-17-7
V	0.1 - 0.2	7440-62-2
Er	0.1	7440-52-0
Th	0.1	7440-29-1
Ti	0.1	7440-32-6
B	0 - 0.1	7440-42-8
Cr	0 - 0.1	7440-47-3
Cu	0 - 0.1	7440-50-8
Mo	0 - 0.1	7439-98-7

IPCI C22C0038-04; C22C0038-02; C22C0038-08; C22C0038-12; C22C0038-14; C22C0038-18; C22C0038-16

IPCR C22C0038-04 [I]; C22C0038-02 [I]; C22C0038-08 [I]; C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST antibacterial stainless steel

IT Antibacterial agents
Candida albicans
Clostridium tetani
Escherichia coli
Staphylococcus aureus
(anti-bacterial stainless steel)

IT 1998722-49-8, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B 0-0.1, Er 0.1, V 0.1-0.2, Tm 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th 0.1, Cr 0-0.1, Cu 0-0.1, Fe bal.

RL: TEM (Technical or engineered material use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(anti-bacterial stainless steel)

L12 ANSWER 91 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1363138 CAPLUS Full-text

DOCUMENT NUMBER: 165:320572

TITLE: Alloy steel with high strength and high toughness

INVENTOR(S): He, Huaqiong

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 5pp.
CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 105861921	A	20160817	CN 2016-10264079	20160423

PRIORITY APPLN. INFO.:

CN 2016-10264079

20160423

AB The title alloy ~~steel~~ comprises boron 0.02-0.1 wt%, carbon 0.1-0.2 wt%, chromium 0.1 wt%, cobalt and zirconium (at a ratio of 4-6:1) 0.05-0.1 wt%, copper 0.2-0.3 wt%, manganese 0.8-1.2 wt%, molybdenum 0.04-0.1 wt%, nickel 0.3-0.5 wt%, niobium 0.02-0.04 wt%, phosphorus 0.01-0.03 wt%, rubidium 0.2 wt%, silicon 0.2-0.3 wt%, sulfur 0.015-0.025 wt%, thorium 0.1 wt%, titanium 0.1 wt%, vanadium 0.1 wt%, iron bal. The alloy ~~steel~~ of the present invention has ultra-high strength and toughness, and can be used for producing workpieces with relatively high requirements on strength and toughness. The strength and toughness of the alloy ~~steel~~ are related to the content ratio of cobalt to zirconium in the alloy, and little change of the ratio greatly affects the strength and toughness.

IT ~~1988674-60-7~~, Boron 0-0.1, carbon 0.1-0.2, chromium 0.1, cobalt 0-0.1, copper 0.2-0.3, manganese 0.8-1.2, molybdenum 0-0.1, nickel 0.3-0.5, rubidium 0.2, silicon 0.2-0.3, thorium 0.1, titanium 0.1, vanadium 0.1, zirconium 0-0.1, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(alloy ~~steel~~ with high strength and high toughness)

RN 1988674-60-7 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 0.8-1.2, Ni 0.3-0.5, Cu 0.2-0.3, Si 0.2-0.3, Rb 0.2, C 0.1-0.2, Cr 0.1, Th 0.1, Ti 0.1, V 0.1, B 0-0.1, Co 0-0.1, Mo 0-0.1, Zr 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	96 - 98	7439-89-6
Mn	0.8 - 1.2	7439-96-5
Ni	0.3 - 0.5	7440-02-0
Cu	0.2 - 0.3	7440-50-8
Si	0.2 - 0.3	7440-21-3
Rb	0.2	7440-17-7
C	0.1 - 0.2	7440-44-0
Cr	0.1	7440-47-3
Th	0.1	7440-29-1
Ti	0.1	7440-32-6
V	0.1	7440-62-2
B	0 - 0.1	7440-42-8
Co	0 - 0.1	7440-48-4
Mo	0 - 0.1	7439-98-7
Zr	0 - 0.1	7440-67-7

IPCI C22C0038-02; C22C0038-32; C22C0038-04; C22C0038-18; C22C0038-12;
C22C0038-10; C22C0038-08; C22C0038-16; C22C0038-14

IPCR C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-08 [I]; C22C0038-10 [I];
C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I];
C22C0038-32 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST alloy ~~steel~~ tensile yield strength toughness

IT Impact strength

Tensile strength

Yield strength

(alloy ~~steel~~ with high strength and high toughness)

IT ~~1988674-60-7~~, Boron 0-0.1, carbon 0.1-0.2, chromium 0.1, cobalt 0-0.1, copper 0.2-0.3, manganese 0.8-1.2, molybdenum 0-0.1, nickel 0.3-0.5, rubidium 0.2, silicon 0.2-0.3, thorium 0.1, titanium 0.1, vanadium 0.1, zirconium 0-0.1, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(alloy ~~steel~~ with high strength and high toughness)

L12 ANSWER 92 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1336365 CAPLUS Full-text

DOCUMENT NUMBER: 165:309752

TITLE: Abrasion-resistant ~~steel~~ plate with thickness of 4-8 mm for HB450-grade engineering machinery and manufacturing method thereof

INVENTOR(S): Hou, Dengyi; Feng, Yong; Sun, Genling; Wang, Nanhui; Cong, Liang; Su, Xiumei; Yang, Ruixia

PATENT ASSIGNEE(S): Shandong Iron & Steel Co., Ltd., Peop. Rep. China

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1263 of 1430

SOURCE: Faming Zhuanli Shenqing, 11pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 105861928	A	20160817	CN 2016-10440247	20160617
PRIORITY APPLN. INFO.:			CN 2016-10440247	20160617

AB The present invention belongs to the tech. field of prodn. of steel plates for engineering machinery and particularly relates to an abrasion-resistant steel plate with thickness of 4-8 mm for HB450-grade engineering machinery and a manufg. method thereof. The abrasion-resistant steel plate with thickness of 4-8 mm for HB450-grade engineering machinery comprises the following molten chem. components in percentage by wt.: C 0.16-0.18%, Si 0.05-0.20%, Mn, 0.50-0.70%, P less than or equal to 0.010%, S less than or equal to 0.003%, Alt 0.020-0.030%, Cr 0.35-0.45%, Mo 0.10-0.15%, B 0.0008-0.0015%, Ti 0.015-0.025%, O less than or equal to 10 ppm, N less than or equal to 15 ppm, H less than or equal to 3 ppm, and the balance of Fe and inevitable impurities. The manuf. method comprises KR iron melt pre-treatment, converter smelting, deoxidn. alloying, CAS refining, LF refining, RH vacuum degassing, electromagnetic stirring and continuously casting to gain blanks, cold stacking the blanks, heating the blanks, high pressure water descaling, four-roll rough rolling, four-roll finish rolling, thermal straightening, water cooling and quenching, thermal straightening, distressing and annealing, thermal straightening, and length-fixing cutting. The steel plate belongs to thin-size high-grade high-strength abrasion-resistant steel, has excellent mech. property, high purity and good plate shape, and is easy to weld.

IT 1315482-08-6P, HB450, preparation

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(abrasion-resistant steel plate with thickness of 4-8 mm for HB450-grade engineering machinery and manufg. method thereof)

RN 1315482-08-6 CAPLUS

CN Steel, (HB450) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	1.2 - 1.6	7439-96-5
Si	0.4 - 0.6	7440-21-3
B	0 - 0.4	7440-42-8
Cr	0 - 0.4	7440-47-3
Ti	0 - 0.4	7440-32-6
C	0.2	7440-44-0

IPCI C22C0038-02; C22C0038-04; C22C0038-06; C22C0038-18; C22C0038-12; C22C0038-32; C22C0038-14; C22C0033-04; C21D0001-30; C21D0001-18; C21D0008-02

IPCR C22C0038-02 [I]; C21D0001-18 [I]; C21D0001-30 [I]; C21D0008-02 [I]; C22C0033-04 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-18 [I]; C22C0038-32 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST steel plate thickness engineering machinery manufg rolling quenching annealing

IT Apparatus

(Engineering; abrasion-resistant steel plate with thickness of 4-8 mm for HB450-grade engineering machinery and manufg. method thereof)

IT Annealing

Finishing

Industrial manufacturing

Plates

Quenching (cooling)

Rolling (metals)

(abrasion-resistant steel plate with thickness of 4-8 mm for HB450-grade engineering machinery and manufg. method thereof)

IT 1315482-08-6P, HB450, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(abrasion-resistant ~~steel~~ plate with thickness of 4-8 mm for HB450-grade engineering machinery and manufg. method thereof)

L12 ANSWER 93 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1336280 CAPLUS Full-text
DOCUMENT NUMBER: 165:320587
TITLE: Long-service-life ~~steel~~ ball for shot blasting surface treatment, and its preparation method
INVENTOR(S): Hu, Yinji
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 16pp.
CODEN: CNXXEV

DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 105861922	A	20160817	CN 2016-10272692	20160428
CN 105861922	B	20170929		

PRIORITY APPLN. INFO.: CN 2016-10272692 20160428

AB The inventive long-service-life ~~steel~~ ball for shot blasting surface treatment comprises (by wt%) aluminum 0.001-0.05, carbon 0.1-0.4, chromium 0.3-1.5, copper 0.05-0.2, manganese 0.4-1.5, molybdenum 0.001-0.05, nickel 0.001-0.1, niobium 0.001-0.2, phosphorus 0-0.05, silicon 0.1-1.0, sulfur 0-0.05, titanium 0.001-0.1, tungsten 0.001-0.1, vanadium 0.001-0.2, zinc 0.001-0.1, boron, magnesium, cerium and/or lanthanum 0.0001-0.1, iron balance. The ~~steel~~ ball has metallog. structure of lath martensite-bainite duplex structure, or lath martensite-plate martensite duplex structure. The prepn. method includes smelting, deoxidizing with aluminum, performing centrifugal granulation, cooling with water to form as-cast ~~steel~~ balls, drying, sieving, heating at 860-930°C for 30-40 min, quenching in water, and tempering by heating at 150-480°C for 30-60 min. The ~~steel~~ ball has good wear resistance, long service life, high surface hardness, and breaking resistance.

IT 1988677-28-6P, Carbon 0.1-0.4, chromium 0.3-1.5, copper 0.05-0.2, manganese 0.4-1.5, nickel 0.001-0.1, niobium 0.001-0.2, silicon 0.1-1.0, titanium 0.001-0.1, tungsten 0.001-0.1, vanadium 0.001-0.2, zinc 0.001-0.1, boron 0-0.1, magnesium 0-0.1, cerium 0-0.1, lanthanum 0.0001-0.1, iron bal.
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(long-service-life ~~steel~~ ball for shot blasting surface treatment, and its prepn. method)

RN 1988677-28-6 CAPLUS
CN Iron alloy, base, Fe 94-99, Mn 0.4-1.5, Cr 0.3-1.5, Si 0.1-1, C 0.1-0.4, Cu 0-0.2, Nb 0-0.2, V 0-0.2, B 0-0.1, Ce 0-0.1, La 0-0.1, Mg 0-0.1, Ni 0-0.1, Ti 0-0.1, W 0-0.1, Zn 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.4 - 1.5	7439-96-5
Cr	0.3 - 1.5	7440-47-3
Si	0.1 - 1	7440-21-3
C	0.1 - 0.4	7440-44-0
Cu	0 - 0.2	7440-50-8
Nb	0 - 0.2	7440-03-1
V	0 - 0.2	7440-62-2
B	0 - 0.1	7440-42-8
Ce	0 - 0.1	7440-45-1
La	0 - 0.1	7439-91-0
Mg	0 - 0.1	7439-95-4
Ni	0 - 0.1	7440-02-0

Ti 0 - 0.1 7440-32-6
W 0 - 0.1 7440-33-7
Zn 0 - 0.1 7440-66-6

IPCI C22C0038-02; C22C0038-04; C22C0038-60; C22C0038-18; C22C0038-12;
C22C0038-14; C22C0038-08; C22C0038-16; C22C0038-06; C22C0038-32;
C21D0006-00; C21D0009-36; C21D0001-18; B22F0009-10
IPCR C22C0038-02 [I]; B22F0009-10 [I]; C21D0001-18 [I]; C21D0006-00 [I];
C21D0009-36 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-08 [I];
C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I];
C22C0038-32 [I]; C22C0038-60 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST ~~steel~~ ball shot blasting surface treatment long service life
IT Deoxidation
Granulation
Quenching (cooling)
Shotblasting
Sieving
Smelting
Spheres
Tempering
Wear-resistant materials
(long-service-life ~~steel~~ ball for shot blasting surface
treatment, and its prepn. method)
IT 1988677-28-6P, Carbon 0.1-0.4, chromium 0.3-1.5, copper
0.05-0.2, manganese 0.4-1.5, nickel 0.001-0.1, niobium 0.001-0.2, silicon
0.1-1.0, titanium 0.001-0.1, tungsten 0.001-0.1, vanadium 0.001-0.2, zinc
0.001-0.1, boron 0-0.1, magnesium 0-0.1, cerium 0-0.1, lanthanum
0.0001-0.1, iron bal.
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PREP (Preparation);
PROC (Process); USES (Uses)
(long-service-life ~~steel~~ ball for shot blasting surface
treatment, and its prepn. method)
IT 7429-90-5, Aluminum, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(long-service-life ~~steel~~ ball for shot blasting surface
treatment, and its prepn. method)

L12 ANSWER 94 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1287935 CAPLUS Full-text

DOCUMENT NUMBER: 165:278246

TITLE: ~~Steel~~ sheet blank having laser cut end surfaces,
~~steel~~ sheet for laser cutting, and manufacture thereof

INVENTOR(S): Fujinaka, Shingo

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016141816	A	20160808	JP 2015-15695	20150129
JP 6417977	B2	20181107		

PRIORITY APPLN. INFO.: JP 2015-15695 20150129

AB The title ~~steel~~ sheet blank is characterized by a compn. contg. C
0.02-0.16, Si 0.04-2, Mn 0.4-3, P $\leq$ 0.05, S $\leq$ 0.02, sol.Al
0.01-2, and balance Fe, a microstructure having martensite and bainite for
total area ratio $\geq$ 70% at cut end surfaces with 40 μ m width to
inside, and having ferrite area ratio 10-90%, retained austenite area
ratio $\geq$ 1%, and balance martensite and bainite at mother material
parts except the cut end surfaces, and tensile strength $\geq$ 440 MPa
and $<$ 780 MPa. Optionally, the compn. contains (1) Ti $\leq$ 0.2, Nb
 $\leq$ 0.2, and/or V $\leq$ 0.2, (2) Cu $\leq$ 1, Ni $\leq$ 1, Cr
 $\leq$ 1, Mo $\leq$ 1, and/or B $\leq$ 0.1, and/or (3) REM $\leq$ 0.1,
Mg $\leq$ 0.01, Ca $\leq$ 0.01, and/or Bi $\leq$ 0.1 mass%. The title
~~steel~~ sheet is manufd. by the steps comprising: hot rolling a ~~steel~~
slab at 1100-1300°, finishing the hot rolling at 850-950°,

and then coiling at $\leq 650^\circ$; (B) pickling and cold rolling the hot rolled sheet; and then (C) continuous annealing by heating at $\geq [(Ac1 + Ac3)/2]$ and $\leq (Ac3 + 50^\circ)$, retaining at the temp. region for 240 s, and then cooling at av. cooling rate $2-50^\circ/\text{s}$ to $250-500^\circ$. The manuf. process provides the high-strength steel sheet having excellent elongation and stretch flangeability to give the steel sheet blank.

IT 1980840-39-8D, Mg,Ca microalloy
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

RN 1980840-39-8 CAPLUS

CN Iron alloy, base, Fe 88-100, Mn 0.4-3, Al 0-2, Si 0-2, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, B 0-0.1, Bi 0-0.1, misch metal 0-0.1
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Fe	88 - 100	7439-89-6
Mn	0.4 - 3	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
B	0 - 0.1	7440-42-8
Bi	0 - 0.1	7440-69-9
Misch metal	0 - 0.1	8049-20-5

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I];
 C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-5 (Ferrous Metals and Alloys)

ST laser cutting steel sheet blank microstructure; annealing steel sheet laser cutting

IT Annealing
 Hot rolling
 Laser cutting
 Microstructure
 (manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

IT 1980840-37-6 1980840-39-8D, Mg,Ca microalloy
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

IT 12173-93-2, Martensite, uses 12427-23-5, Bainite 12427-24-6, Ferrite (ferrous metal component)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

IT 7439-95-4D, Magnesium, trace in steel 7440-70-2D, Calcium, trace in steel
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (microalloy; manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

IT 12244-31-4, Austenite, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (retained; manuf. of steel sheet for laser cutting and microstructure of steel sheet blank)

DOCUMENT NUMBER: 165:167420
TITLE: An alloy ~~steel~~ new material with resistance to high temperature oxidation
INVENTOR(S): Guo, Jiachuan
PATENT ASSIGNEE(S): Wenling Chuangjia Information Technology Co., Ltd.,
Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 5pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 105734420	A	20160706	CN 2016-10154150	20160317
PRIORITY APPLN. INFO.:			CN 2016-10154150	20160317

AB The present invention discloses an alloy ~~steel~~ new material with resistance to high temp. oxidn., comprising 0.30~0.50wt% of nickel, 0.80~1.40wt% of manganese, 0.20~0.34wt% of silicon, 0.14~0.18wt% of carbon, 0.02~0.06wt% of boron, 0.01~0.02wt% of phosphorus, 0.015~0.025wt% of sulfur, 0.08~0.1wt% of chromium, 0.06~0.2wt% of vanadium, 0.2~0.3wt% of copper, 0.02~0.08wt% of molybdenum, 0.08~0.1wt% of titanium, 0.02~0.04wt% of niobium, 0.06~0.2wt% of rubidium, 0.08~0.1wt% of thorium, 0.06~0.1wt% of lanthanum and germanium, and balance iron; wherein the germanium content is 2~4 times of the lanthanum content. The alloy ~~steel~~ new material provided by the present invention has excellent high temp. oxidn. resistance, and could be used for manufg. the workpiece with high temp. oxidn. resistance. The high temp. oxidn. resistance of the alloy ~~steel~~ new material is related with the content proportion of the lanthanum and germanium in the alloy ~~steel~~.

IT 1960401-15-3, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B 0-0.1, Cr 0.1, V 0.1-0.2, Cu 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th 0.1, La 0-0.1, Ge 0-0.1, Fe bal.
RL: TEM (Technical or engineered material use); USES (Uses)
(alloy ~~steel~~ new material with resistance to high temp. oxidn.)

RN 1960401-15-3 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 0.8-1.4, Ni 0.3-0.5, Cu 0.2-0.3, Si 0.2-0.3, C 0.1-0.2, Rb 0.1-0.2, V 0.1-0.2, Cr 0.1, Th 0.1, Ti 0.1, B 0-0.1, Ge 0-0.1, La 0-0.1, Mo 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Fe	96 - 98	7439-89-6
Mn	0.8 - 1.4	7439-96-5
Ni	0.3 - 0.5	7440-02-0
Cu	0.2 - 0.3	7440-50-8
Si	0.2 - 0.3	7440-21-3
C	0.1 - 0.2	7440-44-0
Rb	0.1 - 0.2	7440-17-7
V	0.1 - 0.2	7440-62-2
Cr	0.1	7440-47-3
Th	0.1	7440-29-1
Ti	0.1	7440-32-6
B	0 - 0.1	7440-42-8
Ge	0 - 0.1	7440-56-4
La	0 - 0.1	7439-91-0
Mo	0 - 0.1	7439-98-7

IPCI C22C0038-04; C22C0038-08; C22C0038-02; C22C0038-18; C22C0038-12; C22C0038-16; C22C0038-14

IPCR C22C0038-04 [I]; C22C0038-02 [I]; C22C0038-08 [I]; C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST alloy ~~steel~~ material high temp oxidn resistance

IT Furnaces
(alloy ~~steel~~ new material with resistance to high temp. oxidn.)

IT 1960401-15-3, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B

0-0.1, Cr 0.1, V 0.1-0.2, Cu 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th 0.1, La 0-0.1, Ge 0-0.1, Fe bal.

RL: TEM (Technical or engineered material use); USES (Uses)
(alloy ~~steel~~ new material with resistance to high temp.
oxidn.)

L12 ANSWER 96 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1011326 CAPLUS Full-text
DOCUMENT NUMBER: 165:117791
TITLE: High temperature resistant alloy ~~steel~~ and
preparation method thereof
INVENTOR(S): Xu, Ting
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 5pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 105695866	A	20160622	CN 2016-10264926	20160423
PRIORITY APPLN. INFO.:			CN 2016-10264926	20160423

AB The present invention discloses a high temp. resistant alloy ~~steel~~ and
prepn. method thereof, comprising 0.30-0.50wt% of nickel, 0.80%-1.40wt% of
manganese, 0.20-0.34wt% of silicon, 0.14-0.18wt% of carbon, 0.02-0.06wt%
of boron, 0.01-0.02wt% of phosphorus, 0.015-0.025wt% of sulfur,
0.08-0.1wt% of chromium, 0.06-0.2wt% of vanadium, 0.2-0.3wt% of copper,
0.02-0.08wt% of molybdenum, 0.08-0.1wt% of titanium, 0.02-0.04wt% of
niobium, 0.06-0.2wt% of rubidium, 0.08-0.1wt% of thorium, 0.06-0.1wt% of
erbium and thulium, the residue is iron; wherein, the content of described
thulium is 2-4 times of the content of erbium. The alloy ~~steel~~ novel
material provided by the present invention has excellent high temp. oxidn.
resistance, it is possible to prep. the workpiece that the high temp.
oxidn. resistance is high. The high temp. oxidn. resistance of this alloy
~~steel~~ novel material is relevant with the content ratio of thulium and
erbium in this ~~steel~~ alloy.

IT 1949764-15-1, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B
0-0.1, Cr 0.1, V 0.1-0.2, Cu 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th
0.1, Er 0-0.1, Tm 0-0.1, Fe bal.

RL: TEM (Technical or engineered material use); USES (Uses)
(high temp. resistant alloy ~~steel~~ and prepn. method thereof)

RN 1949764-15-1 CAPLUS

CN Iron alloy, base, Fe 96-98, Mn 0.8-1.4, Ni 0.3-0.5, Cu 0.2-0.3, Si 0.2-0.3, C
0.1-0.2, Rb 0.1-0.2, V 0.1-0.2, Cr 0.1, Th 0.1, Ti 0.1, B 0-0.1, Er 0-0.1, Mo
0-0.1, Tm 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	96 - 98	7439-89-6
Mn	0.8 - 1.4	7439-96-5
Ni	0.3 - 0.5	7440-02-0
Cu	0.2 - 0.3	7440-50-8
Si	0.2 - 0.3	7440-21-3
C	0.1 - 0.2	7440-44-0
Rb	0.1 - 0.2	7440-17-7
V	0.1 - 0.2	7440-62-2
Cr	0.1	7440-47-3
Th	0.1	7440-29-1
Ti	0.1	7440-32-6
B	0 - 0.1	7440-42-8
Er	0 - 0.1	7440-52-0
Mo	0 - 0.1	7439-98-7
Tm	0 - 0.1	7440-30-4

IPCI C22C0038-08; C22C0038-04; C22C0038-02; C22C0038-32; C22C0038-18;
C22C0038-12; C22C0038-16; C22C0038-14

IPCR C22C0038-08 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-12 [I];
C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I]; C22C0038-32 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST high temp resistant alloy steel
IT Heat-resistant materials
(high temp. resistant alloy steel and prepn. method thereof)
IT 1949764-15-1, Ni 0.3-0.5, Mn 0.8-1.4, Si 0.2-0.3, C 0.1-0.2, B
0-0.1, Cr 0.1, V 0.1-0.2, Cu 0.2-0.3, Mo 0-0.1, Ti 0.1, Rb 0.1-0.2, Th
0.1, Er 0-0.1, Tm 0-0.1, Fe bal.
RL: TEM (Technical or engineered material use); USES (Uses)
(high temp. resistant alloy steel and prepn. method thereof)

L12 ANSWER 97 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:894459 CAPLUS Full-text
DOCUMENT NUMBER: 165:46380
TITLE: A high-strength high-toughness alloy steel
INVENTOR(S): Song, Xiaoling
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 5pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 105624555	A	20160601	CN 2016-10038427	20160120
PRIORITY APPLN. INFO.:			CN 2016-10038427	20160120

AB The present invention discloses a high-strength high-toughness alloy steel. The alloy steel includes carbon 0.14-0.18, Si 0.20-0.34, boron 0.02-0.06, Mn 0.80-1.40, phosphorus 0.01-0.02, sulfur 0.015-0.025, chromium 0.08-0.1, vanadium 0.06-0.2, nickel 0.30-0.50, Cu 0.2-0.3, molybdenum 0.02-0.08, titanium 0.08-0.1, niobium 0.02-0.04, rubidium 0.06-0.2, indium 0.01-0.02, europium 0.02-0.08, thorium 0.08-0.1, the balance iron; wherein the content of europium is 2 to 4 times of indium content. Alloy steel of the present invention has ultra-high strength and toughness, can be used in manuf. of workpiece with high requirement to strength and toughness. The strength and toughness of the steel alloy is relative to content ratio of europium and indium in alloy steel, and small changes of the content ratio has large influence on the strength and toughness.

IT 1935673-46-3, Boron 0.02-0.06, carbon 0.14-0.18, copper 0.2-0.3, chromium 0.1, europium 0.02-0.08, iron 71.28-97.88, manganese 0.80-1.40, molybdenum 0.02-0.08, nickel 0.30-0.50, rubidium 0.06-0.2, silicon 0.20-0.34, titanium 0.1, thorium 0.1, vanadium 0.06-0.2
RL: TEM (Technical or engineered material use); USES (Uses)
(high-strength high-toughness alloy steel)
RN 1935673-46-3 CAPLUS
CN Iron alloy, base, Fe 71-98, Mn 0.8-1.4, Ni 0.3-0.5, Cu 0.2-0.3, Si 0.2-0.3, C 0.1-0.2, Rb 0.1-0.2, V 0.1-0.2, Cr 0.1, Th 0.1, Ti 0.1, B 0-0.1, Eu 0-0.1, Mo 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	71 - 98	7439-89-6
Mn	0.8 - 1.4	7439-96-5
Ni	0.3 - 0.5	7440-02-0
Cu	0.2 - 0.3	7440-50-8
Si	0.2 - 0.3	7440-21-3
C	0.1 - 0.2	7440-44-0
Rb	0.1 - 0.2	7440-17-7
V	0.1 - 0.2	7440-62-2
Cr	0.1	7440-47-3
Th	0.1	7440-29-1
Ti	0.1	7440-32-6
B	0 - 0.1	7440-42-8
Eu	0 - 0.1	7440-53-1
Mo	0 - 0.1	7439-98-7

IPCI C22C0038-04; C22C0038-02; C22C0038-18; C22C0038-12; C22C0038-08;
C22C0038-16; C22C0038-14

IPCR C22C0038-04 [I]; C22C0038-02 [I]; C22C0038-08 [I]; C22C0038-12 [I];
C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I]

CC 55-12 (Ferrous Metals and Alloys)
ST high strength toughness alloy steel
IT 1935673-46-3, Boron 0.02-0.06, carbon 0.14-0.18, copper 0.2-0.3,
chromium 0.1, europium 0.02-0.08, iron 71.28-97.88, manganese 0.80-1.40,
molybdenum 0.02-0.08, nickel 0.30-0.50, rubidium 0.06-0.2, silicon
0.20-0.34, titanium 0.1, thorium 0.1, vanadium 0.06-0.2
RL: TEM (Technical or engineered material use); USES (Uses)
(high-strength high-toughness alloy steel)

L12 ANSWER 98 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:892009 CAPLUS Full-text
DOCUMENT NUMBER: 165:46330
TITLE: High-strength high-ductility steel plate for
automobile body
INVENTOR(S): Murakami, Toshio; Otani, Shigeo
PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.),
Japan
SOURCE: PCT Int. Appl., 27pp.; Chemical Indexing Equivalent to
165:46317 (JP)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016084847	A1	20160602	WO 2015-JP83078	20151125
JP 2016098427	A	20160530	JP 2014-238710	20141126
JP 6282577	B2	20180221		
KR 2017070230	A	20170621	KR 2017-7013590	20151125
KR 2111921	B1	20200518		
CN 107002192	A	20170801	CN 2015-80061877	20151125
CN 107002192	B	20190308		
EP 3225708	A1	20171004	EP 2015-862199	20151125
US 20170268077	A1	20170921	US 2017-15528675	20170522
PRIORITY APPLN. INFO.:			JP 2014-238710	A 20141126
			WO 2015-JP83078	W 20151125

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention provides a high-strength high-ductility steel plate
excellent in strength-ductility balance which can secure tensile strength
(TS) × elongation (EL) × elongation flange ability (λ)
of more than 1000000MPa·%, and yield ratio (YR) of 0.7 or
more. The high-strength high-ductility steel plate contains (by wt.%) C
0.10-0.35, Si+Al 0.5-2.0, Mn 1.0-4.0, P 0-0.05, S 0-0.01, and iron and
inevitable impurities as balance. As for steel texture, retained
austenite is 8% or more at the area rate with respect to all the texture,
and the remainder consists of one or two of bainite, martensite, tempered
bainite, and tempered martensite. As for the carbon concn. in the
retained austenite, the mean carbon concn. is 0.9-1.2 mass%, and the std.
deviation of the carbon concn. distribution is more than 0.35 mass%. The
region with carbon concn. of more than 1.5 mass% is 1.0% or more at the
area rate to all the texture.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AKAMIZU HIROSHI	2005			JP 2005336526 A	CAPLUS
FUTAMURA YUICHI	2011			JP 2011157583 A	CAPLUS
MATSUDA HIROSHI	2010			JP 2010065273 A	CAPLUS
NOMURA MASAHIRO	2005			JP 2005179703 A	CAPLUS
OKAMOTO RIKI	2011			WO 2011093490 A1	CAPLUS
SPEER JOHN G	2006			US 20060011274 A1	CAPLUS

IT 1935673-79-2
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high-strength high-ductility steel plate for automobile
body)

RN 1935673-79-2 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo
0-1, Ni 0-1, C 0.1-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.1 - 0.4	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]
 IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~ plate strength ductility microstructure automobile body

IT Automobile bodies

Elongation, mechanical

Phase composition

Tensile strength

Yield strength

(high-strength high-ductility ~~steel~~ plate)

IT Microstructure

(high-strength high-ductility ~~steel~~ plate for automobile body)

IT 7440-44-0, Carbon, properties

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(alloy element, high-strength high-ductility ~~steel~~ plate)

IT ~~1935673-79-2~~

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(high-strength high-ductility ~~steel~~ plate for automobile body)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L12 ANSWER 99 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:871152 CAPLUS Full-text

DOCUMENT NUMBER: 165:46317

TITLE: High-strength high-ductility ~~steel~~ plate for automobile body

INVENTOR(S): Murakami, Toshio; Otani, Shigeo

PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.; Chemical Indexing
 Equivalent to 165:46330 (WO)
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016098427	A	20160530	JP 2014-238710	20141126
JP 6282577	B2	20180221		
WO 2016084847	A1	20160602	WO 2015-JP83078	20151125
KR 2017070230	A	20170621	KR 2017-7013590	20151125
KR 2111921	B1	20200518		
CN 107002192	A	20170801	CN 2015-80061877	20151125
CN 107002192	B	20190308		
EP 3225708	A1	20171004	EP 2015-862199	20151125
US 20170268077	A1	20170921	US 2017-15528675	20170522

PRIORITY APPLN. INFO.:

JP 2014-238710	A	20141126
WO 2015-JP83078	W	20151125

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention provides a high-strength high-ductility ~~steel~~ plate excellent in strength-ductility balance which can secure tensile strength (TS) × elongation (EL) × elongation flange ability (λ) of more than 1000000MPa·%, and yield ratio (YR) of 0.7 or more. The high-strength high-ductility ~~steel~~ plate contains (by wt.%) C 0.10-0.35, Si+Al 0.5-2.0, Mn 1.0-4.0, P 0-0.05, S 0-0.01, and iron and inevitable impurities as balance. As for ~~steel~~ texture, retained austenite is 8% or more at the area rate with respect to all the texture, and the remainder consists of one or two of bainite, martensite, tempered bainite, and tempered martensite. As for the carbon concn. in the retained austenite, the mean carbon concn. is 0.9-1.2 mass%, and the std. deviation of the carbon concn. distribution is more than 0.35 mass%. The region with carbon concn. of more than 1.5 mass% is 1.0% or more at the area rate to all the texture.

IT 1935673-79-2
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(high-strength high-ductility ~~steel~~ plate for automobile body)

RN 1935673-79-2 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.1-0.4, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent		Component Registry Number
=====+	=====	=====	=====
Fe	92	- 98	7439-89-6
Mn	1	- 4	7439-96-5
Al	0	- 2	7429-90-5
Si	0	- 2	7440-21-3
B	0	- 1	7440-42-8
Cr	0	- 1	7440-47-3
Cu	0	- 1	7440-50-8
Mo	0	- 1	7439-98-7
Ni	0	- 1	7440-02-0
C	0.1	- 0.4	7440-44-0
Hf	0	- 0.2	7440-58-6
Nb	0	- 0.2	7440-03-1
Ti	0	- 0.2	7440-32-6
V	0	- 0.2	7440-62-2
Zr	0	- 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N];
C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST ~~steel~~ plate strength ductility microstructure automobile body

IT Automobile bodies
Elongation, mechanical
Phase composition
Tensile strength
Yield strength
(high-strength high-ductility ~~steel~~ plate)

IT Microstructure
(high-strength high-ductility ~~steel~~ plate for automobile body)

IT 7440-44-0, Carbon, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(alloy element, high-strength high-ductility ~~steel~~ plate)

IT 1935673-79-2
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(high-strength high-ductility ~~steel~~ plate for automobile body)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

DOCUMENT NUMBER: 165:35141
TITLE: High strength high ductility ~~steel~~ plate for automobile body
INVENTOR(S): Murakami, Toshio; Otani, Shigeo
PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.; Chemical Indexing Equivalent to 165:35129 (WO)
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2016098413	A	20160530	JP 2014-236928	20141121
JP 6282576	B2	20180221		
WO 2016080534	A1	20160526	WO 2015-JP82758	20151120
KR 2017070168	A	20170621	KR 2017-7013013	20151120
KR 2111923	B1	20200518		
CN 107109557	A	20170829	CN 2015-80061931	20151120
EP 3222741	A1	20170927	EP 2015-860677	20151120
US 20170335423	A1	20171123	US 2017-15527814	20170518
PRIORITY APPLN. INFO.:			JP 2014-236928	A 20141121
			WO 2015-JP82758	W 20151120

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB To provide a superior high strength and high ductility ~~steel~~ sheet strength over ductility balance, a tensile strength (TS) is above 980MPa, tensile strength (TS) × elongation (EL) can be kept more than 25000MPa·%. High strength and high ductility ~~steel~~ sheet component compn., in mass%, C: 0.10-0.30%, Si + Al: 0.5-2.0%, Mn: 1.0-4.0%, P: 0-0.05%, S: at 0-0.01 %, balance of iron and unavoidable impurities, ~~steel~~ organizations has the area ratio for the entire organization, residual austenite is 8% or more, ferrite is less than or equal to 5% greater than 50%, balance bainite, martensite, tempered bainite, and together consist of one or more tempered martensite it relates carbon concn. of the residual austenite, the av. carbon concn. is 0.8-1.1% by mass, the std. deviation of the carbon concn. distribution is 0.25 mass% or more, the carbon concn. for the entire organization is 1.3 mass% or more of the area, it is 1.0% or more in the area ratio.

IT ~~1933489-48-5~~
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(high strength high ductility ~~steel~~ plate for automobile body)

RN 1933489-48-5 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, C 0.1-0.3, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.1 - 0.3	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I];
C21D0001-19 [N]; C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I];
C21D0009-46 [N]
IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)
 ST steel plate strength ductility microstructure automobile body
 IT Automobile bodies
 Elongation at break
 Microstructure
 Tensile strength
 Yield strength
 (high strength high ductility steel plate for automobile body)
 IT 7440-44-0, Carbon, properties
 RL: PRP (Properties)
 (concn. distribution in steel; high strength high ductility steel plate for automobile body)
 IT 1933489-48-5
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (high strength high ductility steel plate for automobile body)
 IT 12173-93-2, Martensite, processes 12244-31-4, Austenite, processes
 12427-23-5, Bainite
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (phase; high strength high ductility steel plate for automobile body)

L12 ANSWER 101 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2016:848429 CAPLUS Full-text
 DOCUMENT NUMBER: 165:35129
 TITLE: High strength high ductility steel plate for automobile body
 INVENTOR(S): Murakami, Toshio; Otani, Shigeo
 PATENT ASSIGNEE(S): Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.), Japan
 SOURCE: PCT Int. Appl., 27pp.; Chemical Indexing Equivalent to 165:35141 (JP)
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016080534	A1	20160526	WO 2015-JP82758	20151120
JP 2016098413	A	20160530	JP 2014-236928	20141121
JP 6282576	B2	20180221		
KR 2017070168	A	20170621	KR 2017-7013013	20151120
KR 2111923	B1	20200518		
CN 107109557	A	20170829	CN 2015-80061931	20151120
EP 3222741	A1	20170927	EP 2015-860677	20151120
US 20170335423	A1	20171123	US 2017-15527814	20170518
PRIORITY APPLN. INFO.:			JP 2014-236928	A 20141121
			WO 2015-JP82758	W 20151120

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB In the present invention, a steel plate contains specific alloy components, has a steel structure that contains specific proportions of retained austenite and ferrite, with the remainder comprising one or more types selected from among bainite, martensite, tempered bainite and tempered martensite, and has a specific av. carbon concn. and carbon concn. distribution in the retained austenite. The steel plate is composed of a mass percentage of carbon 0.10 to 0.30, silicon and aluminum 0.5 to 2.0, manganese 1.0-4.0, phosphorus 0.0 to 0.5, sulfur 0.0 to 0.1, and the balance iron and unavoidable impurities.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ENNIS BERNARD LEO	2014			WO 2014139625 A1	CAPLUS
KOBE STEEL LTD	2012			JP 2012180570 A	CAPLUS
KOBE STEEL LTD	2012			JP 2012214869 A	CAPLUS
NIPPON STEEL CORP	2012			JP 2012041573 A	CAPLUS
NIPPON STEEL & SUMITOMO	2013			JP 2013032581 A	CAPLUS

OKAMOTO TSUTOMU | 2011 | | | JP 2011195956 A | CAPLUS
IT 1933489-48-5
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high strength high ductility ~~steel~~ plate for automobile
body)
RN 1933489-48-5 CAPLUS
CN Iron alloy, base, Fe 92-98, Mn 1-4, Al 0-2, Si 0-2, B 0-1, Cr 0-1, Cu 0-1, Mo
0-1, Ni 0-1, C 0.1-0.3, Hf 0-0.2, Nb 0-0.2, Ti 0-0.2, V 0-0.2, Zr 0-0.2 (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	92 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Al	0 - 2	7429-90-5
Si	0 - 2	7440-21-3
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
C	0.1 - 0.3	7440-44-0
Hf	0 - 0.2	7440-58-6
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Zr	0 - 0.2	7440-67-7

IPCI C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]
IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-06 [I]; C22C0038-58 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST ~~steel~~ plate strength ductility microstructure automobile body
IT Automobile bodies
Elongation at break
Microstructure
Tensile strength
Yield strength
(high strength high ductility ~~steel~~ plate for automobile
body)
IT 7440-44-0, Carbon, properties
RL: PRP (Properties)
(concn. distribution in ~~steel~~; high strength high ductility
~~steel~~ plate for automobile body)
IT 1933489-48-5
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(high strength high ductility ~~steel~~ plate for automobile
body)
IT 12173-93-2, Martensite, processes 12244-31-4, Austenite, processes
12427-23-5, Bainite
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(phase; high strength high ductility ~~steel~~ plate for
automobile body)

L12 ANSWER 102 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:387717 CAPLUS Full-text
DOCUMENT NUMBER: 164:385854
TITLE: Manufacture method of high-strength high-toughness
alloy ~~steel~~
INVENTOR(S): Tao, Jun; Dong, Banglin; Sheng, Xiang
PATENT ASSIGNEE(S): Anhui Chujiang Special Steel Co., Ltd., Peop. Rep.
China
SOURCE: Faming Zhuanli Shenqing, 8pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 105385939	A	20160309	CN 2015-10928577	20151215
PRIORITY APPLN. INFO.:			CN 2015-10928577	20151215
AB	The chem. compn. of the alloy ~~steel~~ contains carbon 0.3-0.58, silicon 0.25-1.38, manganese 0.55-1.55, phosphorus ≤0.025%, sulfur 0.02-0.025, chromium 0.09-1.32, nickel 0.28-0.62, molybdenum 0.02-0.035, titanium 0.18-0.20, vanadium 0.2-0.5, tungsten 0.4-0.9, niobium 0.3-0.6, cobalt 0.11-0.15, copper 0.2-0.8, aluminum ≤0.2, boron ≤0.15%, nitrogen ≤0.3% and inevitable impurities bal. The manuf. method comprises the steps of (1) smelting raw materials in smelting furnace to obtain alloy ~~steel~~ billet, (2) annealing the alloy ~~steel~~ billet, then forging to obtain alloy ~~steel~~ crude product, (3) carrying out heat treatment on the alloy ~~steel~~ crude product, then carrying out primary hot-rolling and fine hot-rolling operations in sequence to obtain alloy ~~steel~~ finished product, and (4) carrying out annealing heat treatment on the alloy ~~steel~~ finished product, cooling to room temp., inspecting and packaging. The alloy ~~steel~~ has low cost, high tensile strength, yield strength and hardness, good uniformity of structure and uniformity of mech. properties, and broad application prospects.			
IT	~~1884454-35-6P~~ , Aluminum 0-0.2, boron 0-0.2, carbon 0.3-0.6, chromium 0.1-1.32, cobalt 0.1-0.2, copper 0.2-0.8, manganese 0.55-1.55, nickel 0.28-0.62, niobium 0.3-0.6, nitrogen 0-0.3, silicon 0.25-1.38, titanium 0.2, tungsten 0.4-0.9, vanadium 0.2-0.5, iron bal. RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (manuf. method of alloy ~~steel~~ having high strength and toughness)			
RN	1884454-35-6 CAPLUS			
CN	Iron alloy, base, Fe 91-97, Mn 0.6-1.6, Si 0.2-1.4, Cr 0.1-1.3, W 0.4-0.9, Cu 0.2-0.8, C 0.3-0.6, Nb 0.3-0.6, Ni 0.3-0.6, V 0.2-0.5, N 0-0.3, Ti 0.2, Co 0.1-0.2, Al 0-0.2, B 0-0.2 (CA INDEX NAME)			

Component	Component Percent		Component Registry Number
=====+=====+=====			
Fe	91	- 97	7439-89-6
Mn	0.6	- 1.6	7439-96-5
Si	0.2	- 1.4	7440-21-3
Cr	0.1	- 1.3	7440-47-3
W	0.4	- 0.9	7440-33-7
Cu	0.2	- 0.8	7440-50-8
C	0.3	- 0.6	7440-44-0
Nb	0.3	- 0.6	7440-03-1
Ni	0.3	- 0.6	7440-02-0
V	0.2	- 0.5	7440-62-2
N	0	- 0.3	17778-88-0
Ti		0.2	7440-32-6
Co	0.1	- 0.2	7440-48-4
Al	0	- 0.2	7429-90-5
B	0	- 0.2	7440-42-8

IPCI C22C0038-02; C22C0038-04; C22C0038-12; C22C0038-14; C22C0038-16; C22C0038-18; C22C0038-08; C22C0033-04; C21D0008-02; C21D0001-26

IPCR C22C0038-02 [I]; C21D0001-26 [I]; C21D0008-02 [I]; C22C0033-04 [I]; C22C0038-04 [I]; C22C0038-08 [I]; C22C0038-12 [I]; C22C0038-14 [I]; C22C0038-16 [I]; C22C0038-18 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST alloy ~~steel~~ smelting forging rolling heat treatment strength toughness

IT Annealing
Forging
Hot rolling
Industrial manufacturing
Smelting
(manuf. method of alloy ~~steel~~ having high strength and toughness)

IT ~~1884454-35-6P~~, Aluminum 0-0.2, boron 0-0.2, carbon 0.3-0.6, chromium 0.1-1.32, cobalt 0.1-0.2, copper 0.2-0.8, manganese 0.55-1.55, nickel 0.28-0.62, niobium 0.3-0.6, nitrogen 0-0.3, silicon 0.25-1.38, titanium 0.2, tungsten 0.4-0.9, vanadium 0.2-0.5, iron bal.

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(manuf. method of alloy ~~steel~~ having high strength and toughness)

L12 ANSWER 103 OF 398 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2015:1942164 CAPLUS Full-text

DOCUMENT NUMBER: 164:40753

TITLE: ~~Steel~~ sheet provided with a sacrificial cathodically protected coating comprising lanthanum

INVENTOR(S): Allely, Christian; Petitjean, Jacques

PATENT ASSIGNEE(S): ArcelorMittal Investigacion y Desarrollo, S.L., Spain

SOURCE: PCT Int. Appl., 20pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2015181581	A1	20151203	WO 2014-IB61788	20140528
CA 2950476	A1	20151203	CA 2015-2950476	20150528
WO 2015181318	A1	20151203	WO 2015-EP61891	20150528
KR 2017010773	A	20170201	KR 2016-7032934	20150528
CN 106460138	A	20170222	CN 2015-80027730	20150528
EP 3149217	A1	20170405	EP 2015-724718	20150528
EP 3149217	B1	20180711		
JP 2017524806	T	20170831	JP 2016-569819	20150528
JP 6762879	B2	20200930		
ES 2689039	T3	20181108	ES 2015-724718	20150528
RU 2689979	C2	20190530	RU 2016-146657	20150528
ZA 2016007435	A	20171220	ZA 2016-7435	20161027
IN 201617039713	A	20170310	IN 2016-17039713	20161121
IN 343260	B	20200804		
MX 2016015550	A	20170425	MX 2016-15550	20161125
US 20170198374	A1	20170713	US 2016-15314457	20161128
US 10676804	B2	20200609		

PRIORITY APPLN. INFO.:

WO 2014-IB61788	A	20140528
WO 2015-EP61891	W	20150528

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a ~~steel~~ sheet provided with a sacrificial cathodically protected coating comprising between 1 and 40 % by wt. zinc, between 0.01 and 0.4 % by wt. lanthanum, and optionally up to 10 % by wt. magnesium, optionally up to 15 % by wt. silicon, and optionally up to 0.3 % by wt., in cumulative amts., of addnl. components, the remainder consisting of aluminum and unavoidable impurities or residual elements. The invention also relates to a method of producing parts by hot or cold swaging and the parts which can be obtained in this way.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
LIXIN FENG	2010			CN 101736217 A	CAPLUS
MORIMOTO YASUhide	2009			JP 2009120942 A	CAPLUS
NOSE KOICHI	2008			EP 1997927 A1	CAPLUS
ZHAO YUNJIE	2013			CN 103045980 A	CAPLUS

IT 1173986-65-6

RL: NUU (Other use, unclassified); USES (Uses)

(~~steel~~ sheet provided with sacrificial cathodically protected coating comprising lanthanum)

RN 1173986-65-6 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3

C	0.2	-	0.5	7440-44-0
Si	0.1	-	0.5	7440-21-3
Ti	0	-	0.2	7440-32-6
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
Cu	0	-	0.1	7440-50-8
Ni	0	-	0.1	7440-02-0
P	0	-	0.1	7723-14-0

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IPCI C23C0002-12 [I]; C22C0021-10 [I]
IPCR C23C0002-12 [I]; C22C0021-10 [I]
CC 56-3 (Nonferrous Metals and Alloys)
ST steel sheet sacrificial cathodically protected coating lanthanum swaging
IT Anticorrosive coating materials
   Coating process
   Swaging
   (steel sheet provided with sacrificial cathodically protected
   coating comprising lanthanum)
IT 7439-91-0, Lanthanum, uses
   RL: MOA (Modifier or additive use); USES (Uses)
   (steel sheet provided with sacrificial cathodically protected
   coating comprising lanthanum)
IT 12597-69-2, Steel, uses 1173986-65-6
   RL: NUU (Other use, unclassified); USES (Uses)
   (steel sheet provided with sacrificial cathodically protected
   coating comprising lanthanum)
IT 1832643-11-4
   RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
   (Technical or engineered material use); PROC (Process); USES (Uses)
   (steel sheet provided with sacrificial cathodically protected
   coating comprising lanthanum)

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=> display ibib abs retable hitstr hitind l13 1-398

L13 ANSWER 1 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2020:2713368 CAPLUS Full-text
 DOCUMENT NUMBER: 174:278826
 TITLE: ~~Steel~~ sheet comprising carbon, silicon and titanium
 with high strength and excellent collision resistance
 INVENTOR(S): Nakano, Katsuya; Takeda, Kengo; Kawata, Hiroyuki;
 Uenishi, Akihiro; Suzuki, Yuya
 PATENT ASSIGNEE(S): Nippon Steel Corporation, Japan
 SOURCE: PCT Int. Appl., 58pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2020262651	A1	20201230	WO 2020-JP25352	20200626
PRIORITY APPLN. INFO.:			JP 2019-121092	A 20190628
			JP 2019-121093	A 20190628

AB A ~~steel~~ sheet which has a metal structure that contains, in terms of vol. fraction, 95% or more of tempered martensite and a total of 5% or less of one or more structures selected from among ferrite, pearlite, bainite, as-quenched martensite and residual austenite. This ~~steel~~ sheet has a tensile strength of 1,100 MPa or more; the std. deviation of the Vickers hardness is 30 or less as measured under a load of 9.8 N at 30 points in a 300µm square area that is centered at the position of t/2, where t is the sheet thickness, in a cross-section of the ~~steel~~ sheet 10, said cross-section being parallel to the sheet thickness direction; and if nanohardness is measured under a max. load of 1 mN at 100 points in a 100µm square area that is centered at the position of t/2, the ratio of the measurement points that have a nanohardness difference of 3 GPa or more from 8 adjacent measurement points is 10% or less.

IT 2572991-88-7

RL: PRP (Properties); TEM (Technical or engineered material use); USES ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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(Uses)
 (steel sheet comprising carbon, silicon and titanium with
 high strength and excellent collision resistance)
 RN 2572991-88-7 CAPLUS
 CN Iron alloy, base, Fe 85-99,Mn 0.6-5,Si 0-2.5,Cr 0-2,Al 0-1,Co 0-1,Ni
 0-1,Cu 0-0.5,Mo 0-0.5,V 0-0.5,C 0.2-0.4,B 0-0.1,Nb 0-0.1,Ta 0-0.1,Ti
 0-0.1,W 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	85 - 99	7439-89-6
Mn	0.6 - 5	7439-96-5
Si	0 - 2.5	7440-21-3
Cr	0 - 2	7440-47-3
Al	0 - 1	7429-90-5
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
V	0 - 0.5	7440-62-2
C	0.2 - 0.4	7440-44-0
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
Ta	0 - 0.1	7440-25-7
Ti	0 - 0.1	7440-32-6
W	0 - 0.1	7440-33-7

IPCI C21D0009-46 [I]; C22C0038-00 [I]; C22C0038-60 [I]
 IPCR C21D0009-46 [I]; C22C0038-00 [I]; C22C0038-60 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 ST carbon silicon titanium steel sheet
 IT Galvanizing
 (electrogalvanizing, layer; steel sheet comprising
 carbon, silicon and titanium with high strength and excellent collision
 resistance)
 IT Hot-dip galvanizing
 (layer; steel sheet comprising carbon, silicon and
 titanium with high strength and excellent collision resistance)
 IT Collisions
 (resistance; steel sheet comprising carbon, silicon and
 titanium with high strength and excellent collision resistance)
 IT Microhardness
 Tensile strength
 Vickers hardness
 (steel sheet comprising carbon, silicon and titanium with
 high strength and excellent collision resistance)
 IT 12597-69-2, Steel, properties
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (sheet; steel sheet comprising carbon, silicon and titanium
 with high strength and excellent collision resistance)
 IT 2572991-88-7
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (steel sheet comprising carbon, silicon and titanium with
 high strength and excellent collision resistance)

L13 ANSWER 2 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:2054532 CAPLUS Full-text

DOCUMENT NUMBER: 173:899795

TITLE: Strong resistance to hydrogen embrittlement via
 surface shielding in multi-layered
 austenite/martensite steel sheets

AUTHOR(S): Jo, Min Cheol; Jo, Min Chul; Yoo, Jisung; Song,
 Taejin; Kim, Sang-Heon; Sohn, Seok Su; Lee, Sunghak
 CORPORATE SOURCE: Center for Advanced Aerospace Materials, Pohang
 University of Science and Technology, Pohang, 37673,
 S. Korea

SOURCE: Materials Science & Engineering, A: Structural
 Materials: Properties, Microstructure and Processing

ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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(2021), 800, 140319
 CODEN: MSAPE3; ISSN: 0921-5093
 DIGITAL OBJECT ID: 10.1016/j.msea.2020.140319
 PUBLISHER: Elsevier B.V.
 DOCUMENT TYPE: Journal; (online computer file)
 LANGUAGE: English

AB Layered architectures have been applied to twinning-induced plasticity (TWIP) ~~steel~~ in terms of configuring multi-layered TWIP and martensitic ~~steel~~ (MLS) sheets to overcome the limitation of low yield strength. However, hydrogen embrittlement (HE) inevitably appears in materials used for high-strength purposes, with the interfacial ~~layers~~ presenting localization sites of hydrogen, thereby limiting the materials' broad structural applications. Here, we present a novel design for MLS sheets that exhibit both strong resistance to HE and a good strength-ductility balance via surface shielding. Our hydrogen penetration data demonstrates that the proposed austenitic shielding structure effectively acts as a barrier to hydrogen due to the reduced hydrogen diffusivity, compared with existing MLS sheets. We propose the optimal surface thickness required to play the role of shielding ~~layer~~ based on the quantified diffusivity and the rule of mixts. of the ~~layer~~ fractions, which presents a plausible novel design for layered architectures that exhibit strong resistance to HE and possess tunable mech. properties.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1991		261	Electron Probe Quant	
Anon	2004			ISO 17081 Method of	
Ashby, M	2003	51	5801	Acta Mater	CAPLUS
Ashby, M	2013	68	4	Scripta Mater	CAPLUS
Barabash, R	2014	45	98	Metall Mater Trans	CAPLUS
Beachem, C	1972	3	441	Metall Mater Trans B	
Bouaziz, O	2008	10	24	Adv Eng Mater	CAPLUS
Bouaziz, O	2016	18	56	Adv Eng Mater	CAPLUS
Cetin, A	2012	60	2265	Acta Mater	CAPLUS
Chin, K	2018	24	489	Met Mater Int	CAPLUS
Cho, L	2018	734	416	Mater Sci Eng, A	CAPLUS
Cho, L	2018	735	448	Mater Sci Eng, A	CAPLUS
De Cooman, B	2011			New Trends and Devel	
Devanathan, M	1962	270	90	Proc R Soc A	CAPLUS
Dunne, D	2012	706	1568	Mater Sci Forum	
Dwivedi, S	2018	43	21603	Int J Hydrogen Energ	CAPLUS
Enomoto, M	2012	43	572	Metall Mater Trans	CAPLUS
Fang, T	2011	331	1587	Science	CAPLUS
Grassel, O	2000	16	1391	Int J Plast	CAPLUS
Gutierrez-Urrutia, I	2010	527	3552	Mater Sci Eng, A	
Gwon, H	2017	696	416	Mater Sci Eng, A	CAPLUS
Han, D	2015	99	45	Scripta Mater	CAPLUS
He, J	2018	726	288	Mater Sci Eng, A	CAPLUS
Huang, M	2018	153	235	Acta Mater	CAPLUS
Ichimura, M	1991	32	1109	Mater Trans, JIM	CAPLUS
Inoue, J	2008	59	1055	Scripta Mater	CAPLUS
Jin, J	2012	60	1680	Acta Mater	CAPLUS
Jo, M	2019	50	4085	Metall Mater Trans	CAPLUS
Jo, S	2015	627	374	J Alloys Compd	CAPLUS
Kim, J	2018	147	304	Acta Mater	CAPLUS
Kim, J	2009	505	105	Mater Sci Eng, A	
Kim, J	2017	682	164	Mater Sci Eng, A	CAPLUS
Kim, J	2019	25	912	Met Mater Int	CAPLUS
Kim, J	2019	9	6829	Sci Rep	
Koseki, T	2014	55	227	Mater Trans	CAPLUS
Koyama, M	2013	61	4607	Acta Mater	CAPLUS
Koyama, M	2017	355	1055	Science	CAPLUS
Kubin, L	2003	48	119	Scripta Mater	CAPLUS
Kwon, Y	2018	43	10129	Int J Hydrogen Energ	CAPLUS
Lee, J	2019	9	5219	Sci Rep	
Li, Y	2013	61	2588	J Mech Phys Solid	CAPLUS
Mohtadi-Bonab, M	2019	25	1109	Met Mater Int	CAPLUS
Oh, S	2020	188	366	Acta Mater	CAPLUS
Park, C	2019	25	584	Met Mater Int	CAPLUS
Park, I	2015	93	63	Corrosion Sci	CAPLUS
Park, J	2017	686	160	Mater Sci Eng, A	CAPLUS

Park, J	2019	759	320	Mater Sci Eng, A	CAPLUS
Ritchie, R	2011	10	817	Nat Mater	CAPLUS
Seok, M	2016	121	164	Acta Mater	CAPLUS
Song, E	2014	87	9	Scripta Mater	CAPLUS
Takai, K	2003	43	520	ISIJ Int	CAPLUS
Wang, M	2005	398	37	Mater Sci Eng, A	
Wang, Y	2002	419	912	Nature	CAPLUS
Wang, Y	2018	150	22	Scripta Mater	CAPLUS
Wei, Y	2014	5	3580	Nat Commun	
Wu, X	2014	2	185	Mater Res Lett	CAPLUS
Yanagimoto, J	2010	59	287	CIRP Ann - Manuf Tec	
Yokota, T	2003	43	534	ISIJ Int	CAPLUS
Yu, W	2018	727	70	Mater Sci Eng, A	CAPLUS
Zhang, Y	2019	165	15	Scripta Mater	CAPLUS

IT 2522569-69-1, C 0.35, Mn 1.3, Si 0.15, Mo 0.1, Cr 0.2, Ti 0-0.06, B 0-0.06, Fe bal., processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (strong resistance to hydrogen embrittlement via surface shielding in multi-layered austenite/martensite steel sheets)

RN 2522569-69-1 CAPLUS

CN Steel, Fe 98,Mn 1.3,C 0.4,Cr 0.2,Si 0.2,Mo 0.1,B 0-0.1,Ti 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	98	7439-89-6
Mn	1.3	7439-96-5
C	0.4	7440-44-0
Cr	0.2	7440-47-3
Si	0.2	7440-21-3
Mo	0.1	7439-98-7
B	0 - 0.1	7440-42-8
Ti	0 - 0.1	7440-32-6

CC 55-8 (Ferrous Metals and Alloys)

ST TWIP steel multilayer austenite martensite shielding hydrogen embrittlement resistance

IT Diffusion
 Elongation, mechanical
 Fracture surface morphology
 Hydrogen embrittlement
 Interface
 Microstructure
 Multilayers
 Sheet materials
 Shields
 Stress-strain relationship
 Tensile strength
 Yield strength
 (strong resistance to hydrogen embrittlement via surface shielding in multi-layered austenite/martensite steel sheets)

IT 1333-74-0, Hydrogen, processes
 RL: OCU (Occurrence, unclassified); PEP (Physical, engineering or chemical process); OCCU (Occurrence); PROC (Process)
 (strong resistance to hydrogen embrittlement via surface shielding in multi-layered austenite/martensite steel sheets)

IT 12173-93-2, Martensite, processes 12244-31-4, Austenite, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (strong resistance to hydrogen embrittlement via surface shielding in multi-layered austenite/martensite steel sheets)

IT 2362540-95-0, C 1.2, Mn 13, Si 0.2, Fe bal. 2522569-69-1, C 0.35, Mn 1.3, Si 0.15, Mo 0.1, Cr 0.2, Ti 0-0.06, B 0-0.06, Fe bal., processes 2522569-74-8, C 0.7, Mn 17, Si 0.6, V 0.3, Al 1.3, Fe bal.
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (strong resistance to hydrogen embrittlement via surface shielding in multi-layered austenite/martensite steel sheets)

L13 ANSWER 3 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:1569923 CAPLUS Full-text
DOCUMENT NUMBER: 173:359646
TITLE: Al-Fe-based plated steel sheet for hot press, and
method for manufacturing hot press member
INVENTOR(S): Sato, Rinta; Nakajima, Seiji; Ando, Satoru
PATENT ASSIGNEE(S): JFE Steel Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2020122202	A	20200813	JP 2019-16283	20190131
PRIORITY APPLN. INFO.:			JP 2019-16283	20190131

AB The title Al-Fe-based plated steel sheet can obtain a hot press member having excellent corrosion resistance after coating and excellent corrosion resistance at the joint portion while realizing a high temp. rising rate when subjected to heating by a furnace heating method performed before hot pressing. The Al-Fe-based plated steel sheet for hot press comprises a base steel sheet, an Al-Fe alloy plated layer formed on at least one surface of the base steel sheet with an adhesion amt. per one surface of 30-100 g/m², having a compn. including Fe 25-90% by mass, Si 0-1% by mass and Al and unavoidable impurities as balance, and unalloyed Al attached to the surface of the Al-Fe alloy plated layer with an adhesion amt. per one surface of 0-90 mg/m².

IT 1356847-15-8
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Al-Fe-based plated steel sheet for hot press, and method for manufg. hot press member)

RN 1356847-15-8 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.5-3, Si 0-2, Cr 0-1, C 0.2-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C23C0002-28 [I]; C22C0021-00 [I]; C22C0038-00 [I]; C22C0021-02 [I]; C22C0038-60 [I]; C21D0009-00 [I]; C21D0001-18 [I]
IPCR C23C0002-12 [I]; C21D0001-18 [I]; C21D0009-00 [I]; C22C0021-00 [I]; C22C0021-02 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C23C0002-28 [I]

CC 56-11 (Nonferrous Metals and Alloys)

ST aluminum iron plating steel sheet hot press

IT Heating

Hot-press molding

(Al-Fe-based plated steel sheet for hot press, and method for manufg. hot press member)

IT 7429-90-5, Aluminum, processes 1356847-15-8 2460706-65-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(Al-Fe-based plated steel sheet for hot press, and method for manufg. hot press member)

L13 ANSWER 4 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:1063971 CAPLUS Full-text

DOCUMENT NUMBER: 173:85787

TITLE: Zinc-coated hot-stamped steel plate or strip with excellent cold bending performance and its

INVENTOR(S): manufacturing method
PATENT ASSIGNEE(S): Bi, Wenzhen; Hong, Jiyao; Wang, Li
SOURCE: Baoshan Iron & Steel Co., Ltd., Peop. Rep. China
PCT Int. Appl., 23pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2020108594	A1	20200604	WO 2019-CN121860	20191129
CN 109371325	A	20190222	CN 2018-11454798	20181130
PRIORITY APPLN. INFO.:			CN 2018-11454798	A 20181130

AB Provided are a zinc-based plated hot-formed steel plate or steel strip having excellent cold bending performance, and a manufg. method thereof; said zinc-based plated hot-formed steel plate or steel strip comprises a substrate having a surface decarburized layer thickness of less than 20 um and a zinc-based plated layer having an adhesion amt. of 10 to 100 g/m.cxa. 2; the component wt. percentages of the substrate are: C: 0.1-0.8%, Si: 0.05-2.0%, Mn: 0.5-3.0%, P≤0.1%, S≤0.05%, Al≤0.1%, N≤0.01%; the remainder is Fe and unavoidable impurities; the av. size of original austenite grains of the substrate is less than 15 um. After hot forming of the substrate, the hot-formed steel plate or steel strip has a tensile strength of 1500 MPa and elongation after fracture of 5%, and the coating is continuous and complete, there are no cracks extending to the substrate, and the steel plate has excellent cold bending performance.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AZUMA MASASHI	2011			JP 2011111675 A	CAPLUS
BI WENZHEN	2017			CN 107127238 A	CAPLUS
BI WENZHEN	2019			CN 109371325 A	CAPLUS
JIN KWANG-KEUN	1996			KR 960005237 B1	
KAWATA HIROYUKI	2014			CN 103874776 A	CAPLUS
TAKEDA GENTARO	2018			WO 2018207560 A1	CAPLUS
TANAKA YUKIMOTO	2012			JP 2012251229 A	CAPLUS
YUANQIANG TU	2010			CN 101880832 A	CAPLUS
ZHOU SHU	2016			CN 106244923 A	CAPLUS
ZHOU SHU	2016			CN 106244923 A	CAPLUS

IT 2293976-55-1D, Aluminum 0-0.1, carbon 0.1-0.8, manganese 0.5-3, phosphorus 0-0.1, silicon 0.05-2, Cr 0-1, Mo 0-1, Ti 0-0.2, Nb 0-0.08, V 0-1, B 0-0.08, iron bal., nitrogen 0-0.01
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Zinc-coated hot-stamped steel plate or strip with excellent cold bending performance and its manufg. method)
RN 2293976-55-1 CAPLUS
CN Iron alloy, base, Fe 91-99, Mn 0.5-3, Si 0-2, Cr 0-1, Mo 0-1, V 0-1, C 0.1-0.8, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-60 [I]; C22C0038-06 [I];
C23C0002-40 [I]; C21D0008-02 [I]
IPCR C22C0038-02 [I]; C21D0008-02 [I]; C22C0038-04 [I]; C22C0038-06 [I];

CC C22C0038-60 [I]; C23C0002-40 [I]
ST 55-3 (Ferrous Metals and Alloys)
IT cold bending performance zinc coating steel manuf hot stamping
IT Coating materials
(Zinc-coated hot-stamped steel plate or strip with
excellent cold bending performance and its manufg. method)
IT Galvanized steel
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(Zinc-coated hot-stamped steel plate or strip with
excellent cold bending performance and its manufg. method)
IT Metalworking
(stamping, hot; Zinc-coated hot-stamped steel plate
or strip with excellent cold bending performance and its manufg.
method)
IT 2293976-55-1D, Aluminum 0-0.1, carbon 0.1-0.8, manganese 0.5-3,
phosphorus 0-0.1, silicon 0.05-2, Cr 0-1, Mo 0-1, Ti 0-0.2, Nb 0-0.08, V
0-1, B 0-0.08, iron bal., nitrogen 0-0.01
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(Zinc-coated hot-stamped steel plate or strip with
excellent cold bending performance and its manufg. method)
IT 7440-66-6, Zinc, processes 98357-26-7
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(Zinc-coated hot-stamped steel plate or strip with
excellent cold bending performance and its manufg. method)

L13 ANSWER 5 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:1063958 CAPLUS Full-text

DOCUMENT NUMBER: 173:85818

TITLE: Hot stamping method of zinc-based coated steel
plate or steel strip with excellent corrosion
resistance

INVENTOR(S): Bi, Wenzhen; Hong, Jiyao; Wang, Li

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: PCT Int. Appl., 17pp.; Chemical Indexing Equivalent to
170:379972 (CN)
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2020108593	A1	20200604	WO 2019-CN121859	20191129
CN 109365606	A	20190222	CN 2018-11453322	20181130
			CN 2018-11453322	A 20181130

PRIORITY APPLN. INFO.:

AB A method for forming a zinc-plated steel plate or steel belt having
good corrosion resistance, comprising the following steps: 1) conveying
the steel plate or steel belt into a heating furnace higher than Ac3,
austenitizing the steel plate or steel belt, and keeping the temp. for
1-7 min; 2) before the steel plate or steel belt leaves the heating
furnace and enters a forming mold, applying different cooling manners
according to different plated thicknesses, wherein when the single-sided
wt. of the plating is less than or equal to 50g/m2, only air cooling is
required before transferring to the forming mold, when the single-sided
wt. of the plating is greater than 50g/m2, aerial fog or water mist
precooling is performed before transferring to the forming mold, and the
steel plate is cooled to be below 700°C at a cooling sped greater
than 30°C/s; and 3) rapidly transferring the steel plate or
steel belt to the mold for hot stamping forming, wherein a transferring
duration does not exceed 1 min, and the temp. of the hot stamping forming
is controlled between 400-800°C. The tensile strength of the
steel plate or steel belt after hot stamping is greater than 1,450
MPa, and substrate cracks caused by local press and LME in an element are
avoided.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====

ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

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AKIRA OBAYASHI	2005			CN 1600877 A	CAPLUS
BI WENZHEN	2017			CN 107127238 A	CAPLUS
BI WENZHEN	2017			CN 107127238 A	CAPLUS
BI WENZHEN	2019			CN 109365606 A	CAPLUS
KOJIMA TAKESHI	2017			CN 106756697 A	CAPLUS
SEKIDO YOSHITO	2013			JP 2013227614 A	CAPLUS
TAKEBAYASHI SHIGETO	2009			JP 2009228134 A	CAPLUS
WILHELM WARNECKE	2010			CN 101849029 A	CAPLUS
YI HONGLIANG	2015			CN 104846274 A	CAPLUS

IT 2293976-55-1
 RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
 TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)

RN 2293976-55-1 CAPLUS

CN Iron alloy, base, Fe 91-99, Mn 0.5-3, Si 0-2, Cr 0-1, Mo 0-1, V 0-1, C
 0.1-0.8, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI B21D0022-02 [I]; C23C0002-06 [I]; C23C0002-40 [I]; C22C0018-00 [I];
 C21D0008-02 [I]

IPCR B21D0022-02 [I]; C21D0008-02 [I]; C22C0018-00 [I]; C23C0002-06 [I];
 C23C0002-40 [I]

CC 55-6 (Ferrous Metals and Alloys)

ST corrosion resistance zinc alloy coating steel hot stamping

IT Anticorrosive coating materials
 Coating materials
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)

IT Metalworking
 (stamping, hot; Hot stamping method of zinc-based coated
 steel plate or steel strip with excellent corrosion
 resistance)

IT 2293976-55-1
 RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
 TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)

IT 2226545-76-0
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)

L13 ANSWER 6 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:1041904 CAPLUS Full-text

DOCUMENT NUMBER: 173:612711

TITLE: Aluminum or aluminum alloy plated steel differential
 strength welded part and its manufacture

INVENTOR(S): Pan, Hua; Liu, Chengjie; Lei, Ming; Wu, Yue; Sun,
 Zhongqu; Jiang, Haomin

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 12pp.
 CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 111215751	A	20200602	CN 2019-10249188	20190329
WO 2020200110	A1	20201008	WO 2020-CN81743	20200327
			CN 2019-10249188	A 20190329

PRIORITY APPLN. INFO.:

AB The invention discloses a steel differential strength welding part with an aluminum or aluminum alloy coating and a manufg. method thereof, wherein the steel differential strength welding part is formed by butt welding a high-strength steel plate and a low-strength steel plate, and the high-strength steel plate and the low-strength steel plate comprise a substrate and at least one of the surfaces of the substrate and the substrate is a pure aluminum or aluminum alloy coating; the high-strength steel plate matrix comprises the following components in percentage by wt.: C 0.08-0.8%, Si 0.05-1.0%, Mn 0.1-5%, P <0.3%, S <0.1%, Al <0.3%, Ti <0.5%, B 0.0005-0.1%, Cr 0.01-3%, residual Fe and inevitable impurities; the low-strength steel plate matrix comprises the following components in percentage by wt.: C 0.03-0.1%, Si 0-0.1%, Mn 1.0-2.0%, P <0.1%, S <0.05%, Al <0.1%, Cr 0-0.1%, Ti 0-0.05%, balance of Fe and inevitable impurities. The tensile strength of the welded part after hot stamping is greater than that of a low-strength steel base metal, the elongation is greater than 4%, and the application requirements of the welded part in the field of automobile hot stamping are met.

IT 2067242-22-0, C 0.08-0.8, Si 0.05-1, Mn 0.1-5, P 0-0.3, S 0-0.1, Al 0-0.3, Ti 0-0.5, B 0.0005-0.1, Cr 0.01-3, Fe bal.
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum or aluminum alloy plated steel differential strength welded part and its manuf.)

RN 2067242-22-0 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B23K0026-26; B23K0026-322; B23K0026-12; C22C0038-38; C22C0038-32; C22C0038-28; C22C0038-06; C22C0038-04; C22C0038-02

IPCR B23K0026-26 [I]; B23K0026-12 [I]; B23K0026-322 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-28 [I]; C22C0038-32 [I]; C22C0038-38 [I]

CC 55-9 (Ferrous Metals and Alloys)

ST r aluminum alloy plated steel differential strength welded part

IT Laser welding

Plating process

Tensile strength

Welds

(aluminum or aluminum alloy plated steel differential strength welded part and its manuf.)

IT Welding of metals

(gas metal-arc welding; aluminum or aluminum alloy plated steel differential strength welded part and its manuf.)

IT 2067242-22-0, C 0.08-0.8, Si 0.05-1, Mn 0.1-5, P 0-0.3, S 0-0.1, Al 0-0.3, Ti 0-0.5, B 0.0005-0.1, Cr 0.01-3, Fe bal. 2490151-15-8, C 0.03-0.1, Si 0-0.1, Mn 0.5-2, Al 0-0.1, Cr 0-0.1, Fe bal., processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(aluminum or aluminum alloy plated steel differential strength welded part and its manuf.)

IT 2490151-16-9, C 0.1-0.25, Si 0.2-0.4, Mn 1.2-2, Al 0-0.06, Ti 0.02-0.08, ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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Cr 0.05-0.2, Fe bal., processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum or aluminum alloy plated ~~steel~~ differential strength welded part and its manuf.)
IT 7429-90-5, Aluminum, uses 1273096-81-3, Aluminum alloy
RL: TEM (Technical or engineered material use); USES (Uses)
(aluminum or aluminum alloy plated ~~steel~~ differential strength welded part and its manuf.)

L13 ANSWER 7 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2020:185423 CAPLUS Full-text
DOCUMENT NUMBER: 172:169762
TITLE: Manufacture of hardened ~~steel~~ products with aluminum-based ~~coatings~~
INVENTOR(S): Pohl, Stefan; Danger, Elisabeth; Labudde, Thorsten; Butzkamm, Juergen
PATENT ASSIGNEE(S): Muhr und Bender KG, Germany
SOURCE: PCT Int. Appl., 29pp.; Chemical Indexing Equivalent to 172:169761 (DE)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2020020644	A1	20200130	WO 2019-EP68581	20190710
DE 102018118015	A1	20200130	DE 2018-102018118015	20180725
PRIORITY APPLN. INFO.:			DE 2018-102018118015 A	20180725

AB A method for producing a hardened ~~steel~~ product, comprises: providing a ~~steel~~ substrate made of a hardenable ~~steel~~; coating the ~~steel~~ substrate with an aluminum pre-coating, the pre-coating being applied to the ~~steel~~ substrate with a thickness of at least 34µm; flexibly rolling the pre-coated ~~steel~~ substrate in order to produce a variable thickness over the length of the pre-coated ~~steel~~ substrate, the pre-coating being rolled out to a reduced first thickness of less than 33µm in thinner first portions and to a reduced second thickness, which is thicker than the reduced first thickness, in thicker second portions; creating a blank from the flexibly rolled ~~steel~~ substrate; heating the blank to the austenitization temp., diffusion processes between the base material and the pre-coating occurring; and hot-forming the heated blank, the heated blank being formed and being quickly cooled in such a way that a hardened ~~steel~~ product having a coating is produced.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
BATISTA LEONARDO MESQUI	2019			EP 3489386 A1	CAPLUS
Hauger, A	1995	23	40	Fertigung	
KIM HEUNG-YUN	2018			US 20180142337 A1	
MACHADO AMORIM	2017			WO 2017017521 A1	CAPLUS
SCHNEIDER DR CHRISTOPH	2017			EP 3181248 A1	
TANAHASHI HIROYUKI	2014			US 20140044987 A1	
WINKLHOFFER KERRY	2008			DE 102007019196 A1	CAPLUS
Windmann, M	2014	246	17	Surface And Coatings	CAPLUS

IT 2408930-78-7
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(substrates; manuf. of hardened ~~steel~~ products with aluminum-based ~~coatings~~)

RN 2408930-78-7 CAPLUS

CN Iron alloy, base, Fe 91-99, Mn 0.5-5, Cr 0-1, Mo 0-1, Si 0.1-0.9, C 0.2-0.5, Ti 0-0.2, V 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Nb 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
Mn	0.5 - 5	7439-96-5

Cr	0	-	1	7440-47-3
Mo	0	-	1	7439-98-7
Si	0.1	-	0.9	7440-21-3
C	0.2	-	0.5	7440-44-0
Ti	0	-	0.2	7440-32-6
V	0	-	0.2	7440-62-2
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
Cu	0	-	0.1	7440-50-8
Nb	0	-	0.1	7440-03-1
Ni	0	-	0.1	7440-02-0
P	0	-	0.1	7723-14-0

IPCI C21D0001-673 [I]; B21B0037-24 [I]; B21B0037-26 [I]; C23C0002-12 [I]

IPCR C21D0001-673 [I]; B21B0037-24 [I]; B21B0037-26 [I]; C23C0002-12 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 56

ST hardened steel aluminum alloy coating silicon austenizing rolling

IT Diffusion

Heat treatment

Hot-dip coating process

Metal forming

Rolling (metals)

Thermomechanical metalworking

(manuf. of hardened steel products with aluminum-based coatings)

IT Oxides (inorganic)

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(manuf. of hardened steel products with aluminum-based coatings)

IT 7429-90-5, Aluminum, processes 77578-10-0

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(coatings; manuf. of hardened steel products with aluminum-based coatings)

IT 12597-69-2, Steel, processes 2408930-78-7

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(substrates; manuf. of hardened steel products with aluminum-based coatings)

L13 ANSWER 8 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2020:178086 CAPLUS Full-text

DOCUMENT NUMBER: 172:169761

TITLE: Manufacture of hardened steel products with aluminum-based coatings

INVENTOR(S): Pohl, Stefan; Danger, Elisabeth; Labudde, Thorsten; Butzkamm, Juergen

PATENT ASSIGNEE(S): Muhr und Bender KG, Germany

SOURCE: Ger. Offen., 13pp.; Chemical Indexing Equivalent to 172:169762 (WO)

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102018118015	A1	20200130	DE 2018-102018118015	20180725
WO 2020020644	A1	20200130	WO 2019-EP68581	20190710

PRIORITY APPLN. INFO.: DE 2018-102018118015 A 20180725

AB A method for producing a hardened steel product, comprises: providing a steel substrate made of a hardenable steel; coating the steel substrate with an aluminum pre-coating, the pre-coating being applied to the steel substrate with a thickness of at least 34µm; flexibly rolling the pre-coated steel substrate in order to produce a variable thickness over the length of the pre-coated steel substrate, the pre-coating being rolled out to a reduced first thickness of less than 33µm in thinner first portions and to a reduced second thickness, which is thicker than the reduced first thickness, in thicker second portions; creating a blank from the flexibly rolled steel substrate; heating the

blank to the austenitization temp., diffusion processes between the base material and the pre-coating occurring; and hot-forming the heated blank, the heated blank being formed and being quickly cooled in such a way that a hardened steel product having a coating is produced.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				DE 102005031461 A1	CAPLUS
Anon				DE 102007013739 B3	CAPLUS
Anon				DE 102007019196 A1	CAPLUS
Anon				DE 102009007909 A1	CAPLUS
Anon	2019			Feuerverzinken In:Wi	
Anon				Salzgitter Flachstah	
IT	2408930-78-7				
	RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)				
	(substrates; manuf. of hardened steel products with aluminum-based coatings)				
RN	2408930-78-7 CAPLUS				
CN	Iron alloy, base, Fe 91-99, Mn 0.5-5, Cr 0-1, Mo 0-1, Si 0.1-0.9, C 0.2-0.5, Ti 0-0.2, V 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Nb 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	91 - 99	7439-89-6
Mn	0.5 - 5	7439-96-5
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Si	0.1 - 0.9	7440-21-3
C	0.2 - 0.5	7440-44-0
Ti	0 - 0.2	7440-32-6
V	0 - 0.2	7440-62-2
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Cu	0 - 0.1	7440-50-8
Nb	0 - 0.1	7440-03-1
Ni	0 - 0.1	7440-02-0
P	0 - 0.1	7723-14-0

IPCI C23F0017-00 [I]; C23C0002-12 [I]; C22C0038-04 [I]
 IPCR C23F0017-00 [I]; C22C0038-04 [I]; C23C0002-12 [I]
 CC 55-6 (Ferrous Metals and Alloys)
 Section cross-reference(s): 56
 ST hardened steel aluminum alloy coating silicon austenizing rolling
 IT Diffusion
 Heat treatment
 Hot-dip coating process
 Metal forming
 Rolling (metals)
 Thermomechanical metalworking
 (manuf. of hardened steel products with aluminum-based coatings)
 IT Oxides (inorganic)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (manuf. of hardened steel products with aluminum-based coatings)
 IT 7429-90-5, Aluminum, processes 77578-10-0
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (coatings; manuf. of hardened steel products with aluminum-based coatings)
 IT 12597-69-2, Steel, processes 2408930-78-7
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (substrates; manuf. of hardened steel products with aluminum-based coatings)

ACCESSION NUMBER: 2019:1450710 CAPLUS Full-text
 TITLE: The influence of the heating rate of cemented constructional steels on the growth of austenitic grain in the process of high-temperature holding
 AUTHOR(S): Kukareko, V. A.; Valko, A. L.; Chichin, A. N.
 CORPORATE SOURCE: Joint Institute of Mechanical Engineering of the National Academy of Sciences of Belarus, Minsk, Belarus
 SOURCE: Vestsi Natsyyanal'nai Akademii Navuk Belarusi, Seryya Fizika-Tekhnichnykh Navuk (2018), (4), 399-406
 CODEN: VABNFA; ISSN: 1561-8358
 DIGITAL OBJECT ID: 10.29235/1561-8358-2018-63-4-399-406
 PUBLISHER: Vydavetski Dom "Belaruskaya Navuka"
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB The influence of the heating mode of samples of constructional cemented steels 20KhNZA, 20KhGMR and 15KhGN2TA on the value of austenite grain after high-temp. isothermal aging at 1000 °C is studied. It is shown that the heating of steels at a rate of 1.2-3.0 °C/min in the phase-transformation interval stabilizes the grain structure of the steels and leads to a slowing down of the kinetics of the growth of austenite grains during prolonged high-temp. aging, which makes it possible to increase the temp. of the chem.-thermal treatment of steels. It is concluded that the stabilization of the grain structure of steels is assocd. with the formation of segregation of impurity atoms and particles at grain boundaries with high-angle disorientation during slow heating, which prevents migration of grain boundaries in the process of prolonged high-temp. aging. A high-temp. chem.-thermal treatment of a batch of billets from steel 20KhNZA under exptl. conditions with stepwise heating in the phase-transformation interval provided a qual. fine-grained structure of the cemented layer.

IT INDEXING IN PROGRESS

IT 37312-00-8, 20KhGMR

RL: TEM (Technical or engineered material use); USES (Uses)
 (influence of heating rate of cemented constructional steels
 on growth of austenitic grain in process of high-temp. holding)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
=====+=====+=====			
Fe	95	- 97	7439-89-6
Ni	0.80	- 1.10	7440-02-0
Cr	0.70	- 1.10	7440-47-3
Mn	0.70	- 1.00	7439-96-5
Si	0.17	- 0.37	7440-21-3
Cu	0	- 0.30	7440-50-8
C	0.16	- 0.23	7440-44-0
W	0	- 0.20	7440-33-7
Mo	0	- 0.15	7439-98-7
V	0	- 0.05	7440-62-2
P	0	- 0.035	7723-14-0
S	0	- 0.035	7704-34-9
Ti	0	- 0.03	7440-32-6
B	0.001		7440-42-8

CC 55 (Ferrous Metals and Alloys)

ST steel austenitic grain growth heating rate holding temp

IT Grain boundaries

Grain size

Heat treatment

Microhardness

Microstructure

Quenching (cooling)

(influence of heating rate of cemented constructional steels
 on growth of austenitic grain in process of high-temp. holding)

IT 37312-00-8, 20KhGMR 61431-72-9, 15KhGN2TA

RL: TEM (Technical or engineered material use); USES (Uses)
 (influence of heating rate of cemented constructional steels

on growth of austenitic grain in process of high-temp. holding)

L13 ANSWER 10 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:1254928 CAPLUS Full-text

DOCUMENT NUMBER: 171:98349

TITLE: Production of cold-rolled flat steel products having metal anti-corrosion layers

INVENTOR(S): Mraczek, Klemens; Muhr, Andreas; Haneder, Bernhard

PATENT ASSIGNEE(S): Voestalpine Stahl GmbH, Austria

SOURCE: PCT Int. Appl., 38pp.; Chemical Indexing Equivalent to 171:98344 (DE)

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019121793	A1	20190627	WO 2018-EP85664	20181218
DE 102017223633	A1	20190627	DE 2017-102017223633	20171221
EP 3728654	A1	20201028	EP 2018-826307	20181218
US 20200325552	A1	20201015	US 2020-16956301	20200619
PRIORITY APPLN. INFO.:			DE 2017-102017223633 A	20171221
			WO 2018-EP85664 W	20181218

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A cold-rolled flat steel contains, in addn. to iron and unavoidable impurities, (in wt.%): C: 0.01-0.35%, Mn: 1-4%, Si: 0.5-2.5%, Nb: up to 0.1%, Ti: 0.015-0.1%, P: up to 0.1%, Al: up to 0.15%, S: up to 0.01%, N: up to 0.1%, and optionally one or more elements from the group of rare earth metals, Mo, Cr, Zr, V, W, Co, Ni, B, Cu, Ca, with rare earth metals: up to 0.2%, Mo: up to 1%, Cr: up to 3%, Zr: up to 1%, V: up to 1%, W: up to 1%, Co: up to 1%, Ni: up to 2%, B: up to 0.1%, Cu: up to 3%, Ca: up to 0.015%. The flat steel products are manufd. by: melting then casting the steel melt to form a semi-finished product; hot-rolling the semi-finished product at 820-1000°C to form a hot strip; winding the hot strip at a temp. between room temp. and 750°C to form a coil; annealing the hot strip at 530-950°C for 1-50 h; cold-rolling the annealed hot strip to form a cold-rolled flat steel product in one or more stages with a total cold-rolling degree of at least 45%; final annealing of the cold-rolled flat steel product at 650-920°C for 30-1500 s; and applying a zinc-based metal anti-corrosion layer by electrolytic galvanizing or hot dip galvanizing of the cold-rolled and finally-annealed flat steel product. As a result of the final annealing of the cold-rolled flat steel product, an Si enrichment layer is created between a surface and a base material of the cold-rolled and finally-annealed flat steel product, the max. Si content of which is higher by a factor of 3-8 than the Si content of the base material and which has a depth of 10 nm to 1 µm.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
ARLAZAROV ARTEM	2017			EP 3146083 A1	CAPLUS
HAGA JUN	2013			JP 2013032582 A	CAPLUS
NAKAGAITO TATSUYA	2007			JP 2007224416 A	CAPLUS

IT 2351042-49-2P

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(sheets; prodn. of cold-rolled flat steel products having metal anti-corrosion layers)

RN 2351042-49-2 CAPLUS

CN Iron alloy, base, Fe 78-98, Mn 1-4, Cr 0-3, Cu 0-3, Si 0.5-2.5, Ni 0-2, Al 0-1.5, Co 0-1, Mo 0-1, V 0-1, W 0-1, Zr 0-1, C 0-0.4, misch metal 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1, N 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	78 - 98	7439-89-6
Mn	1 - 4	7439-96-5

Cr	0	-	3	7440-47-3
Cu	0	-	3	7440-50-8
Si	0.5	-	2.5	7440-21-3
Ni	0	-	2	7440-02-0
Al	0	-	1.5	7429-90-5
Co	0	-	1	7440-48-4
Mo	0	-	1	7439-98-7
V	0	-	1	7440-62-2
W	0	-	1	7440-33-7
Zr	0	-	1	7440-67-7
C	0	-	0.4	7440-44-0
Misch metal	0	-	0.2	8049-20-5
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
B	0	-	0.1	7440-42-8
N	0	-	0.1	17778-88-0
P	0	-	0.1	7723-14-0

IPCI C21D0006-00 [I]; B21B0001-24 [I]; B21B0001-26 [I]; B21B0001-28 [I];
C21D0007-02 [I]; C21D0007-10 [I]; C21D0008-02 [I]; C21D0008-04 [I];
C23C0002-00 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C21D0001-26 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-12 [I]; C22C0038-14 [I];
C25F0001-06 [I]; C23G0001-08 [I]; B21B0001-22 [I]
IPCR C21D0006-00 [I]; B21B0001-22 [I]; B21B0001-24 [I]; B21B0001-26 [I];
B21B0001-28 [I]; C21D0001-26 [I]; C21D0007-02 [I]; C21D0007-10 [I];
C21D0008-02 [I]; C21D0008-04 [I]; C21D0009-46 [I]; C21D0009-48 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-12 [I]; C22C0038-14 [I];
C23C0002-00 [I]; C23G0001-08 [I]; C25F0001-06 [I]
CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 56
ST cold rolling annealing flat steel zinc anticorrosion coating
IT Galvanizing
(electro galvanizing; prodn. of cold-rolled flat steel
products having metal anti-corrosion layers)
IT Annealing
Anticorrosive coating materials
Casting of metals
Cold rolling
Hot rolling
Hot-dip galvanizing
(prodn. of cold-rolled flat steel products having metal
anti-corrosion layers)
IT 7440-66-6P, Zinc, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(coatings; prodn. of cold-rolled flat steel
products having metal anti-corrosion layers)
IT 2351042-49-2P
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PREP (Preparation);
PROC (Process); USES (Uses)
(sheets; prodn. of cold-rolled flat steel products having
metal anti-corrosion layers)

L13 ANSWER 11 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:1241982 CAPLUS Full-text
DOCUMENT NUMBER: 171:98344
TITLE: Production of cold-rolled flat steel products having
metal anti-corrosion layers
INVENTOR(S): Mraczek, Klemens; Muhr, Andreas; Haneder, Bernhard
PATENT ASSIGNEE(S): Voestalpine Stahl GmbH, Austria
SOURCE: Ger. Offen., 17pp.; Chemical Indexing Equivalent to
171:98349 (WO)
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017223633	A1	20190627	DE 2017-102017223633	20171221

WO 2019121793	A1	20190627	WO 2018-EP85664	20181218
EP 3728654	A1	20201028	EP 2018-826307	20181218
US 20200325552	A1	20201015	US 2020-16956301	20200619
PRIORITY APPLN. INFO.:			DE 2017-102017223633 A	20171221
			WO 2018-EP85664	W 20181218

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A cold-rolled flat ~~steel~~ contains, in addn. to iron and unavoidable impurities, (in wt.%): C: 0.01-0.35%, Mn: 1-4%, Si: 0.5-2.5%, Nb: up to 0.1%, Ti: 0.015-0.1%, P: up to 0.1%, Al: up to 0.15%, S: up to 0.01%, N: up to 0.1%, and optionally one or more elements from the group of rare earth metals, Mo, Cr, Zr, V, W, Co, Ni, B, Cu, Ca, with rare earth metals: up to 0.2%, Mo: up to 1%, Cr: up to 3%, Zr: up to 1%, V: up to 1%, W: up to 1%, Co: up to 1%, Ni: up to 2%, B: up to 0.1%, Cu: up to 3%, Ca: up to 0.015%. The flat ~~steel~~ products are manufd. by: melting then casting the ~~steel~~ melt to form a semi-finished product; hot-rolling the semi-finished product at 820-1000°C to form a hot strip; winding the hot strip at a temp. between room temp. and 750°C to form a coil; annealing the hot strip at 530-950°C for 1-50 h; cold-rolling the annealed hot strip to form a cold-rolled flat ~~steel~~ product in one or more stages with a total cold-rolling degree of at least 45%; final annealing of the cold-rolled flat ~~steel~~ product at 650-920°C for 30-1500 s; and applying a zinc-based metal anti-corrosion ~~layer~~ by electrolytic galvanizing or hot dip galvanizing of the cold-rolled and finally-annealed flat ~~steel~~ product. As a result of the final annealing of the cold-rolled flat ~~steel~~ product, an Si enrichment ~~layer~~ is created between a surface and a base material of the cold-rolled and finally-annealed flat ~~steel~~ product, the max. Si content of which is higher by a factor of 3-8 than the Si content of the base material and which has a depth of 10 nm to 1 µm.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				DE 102012013113 A1	CAPLUS
Anon				DE 102015111866 A1	CAPLUS
Anon				DE 102015112886 A1	CAPLUS
Anon				DE 102015112889 A1	CAPLUS
Anon				EP 2383353 A2	CAPLUS
IT	2351042-49-2P				
	RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)				
	(sheets; prodn. of cold-rolled flat ~~steel~~ products having metal anti-corrosion ~~layers~~)				
RN	2351042-49-2	CAPLUS			
CN	Iron alloy, base, Fe 78-98, Mn 1-4, Cr 0-3, Cu 0-3, Si 0.5-2.5, Ni 0-2, Al 0-1.5, Co 0-1, Mo 0-1, V 0-1, W 0-1, Zr 0-1, C 0-0.4, misch metal 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1, N 0-0.1, P 0-0.1 (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	78 - 98	7439-89-6
Mn	1 - 4	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Si	0.5 - 2.5	7440-21-3
Ni	0 - 2	7440-02-0
Al	0 - 1.5	7429-90-5
Co	0 - 1	7440-48-4
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
W	0 - 1	7440-33-7
Zr	0 - 1	7440-67-7
C	0 - 0.4	7440-44-0
Misch metal	0 - 0.2	8049-20-5
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8
N	0 - 0.1	17778-88-0
P	0 - 0.1	7723-14-0

IPCI C22C0038-04 [I]; C22C0038-38 [I]; C22C0038-42 [I]; C22C0038-20 [I]
 IPCR C22C0038-04 [I]; C22C0038-20 [I]; C22C0038-38 [I]; C22C0038-42 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 Section cross-reference(s): 56
 ST cold rolling annealing flat steel zinc anticorrosion coating
 IT Galvanizing
 (electrogalvanizing; prodn. of cold-rolled flat steel
 products having metal anti-corrosion layers)
 IT Annealing
 Anticorrosive coating materials
 Casting of metals
 Cold rolling
 Hot rolling
 Hot-dip galvanizing
 (prodn. of cold-rolled flat steel products having metal
 anti-corrosion layers)
 IT 7440-66-6P, Zinc, preparation
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (coatings; prodn. of cold-rolled flat steel
 products having metal anti-corrosion layers)
 IT 2351042-49-2P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
 process); TEM (Technical or engineered material use); PREP (Preparation);
 PROC (Process); USES (Uses)
 (sheets; prodn. of cold-rolled flat steel products having
 metal anti-corrosion layers)

L13 ANSWER 12 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:1019962 CAPLUS Full-text

DOCUMENT NUMBER: 171:30626

TITLE: Ultra-high strength and excellent ductility in
 multi-layer steel sheet of austenitic hadfield and
 martensitic hot-press-forming steels

AUTHOR(S): Park, Jaeyeong; Jo, Min Cheol; Song, Taejin; Kim,
 Hyoung Seop; Sohn, Seok Su; Lee, Sunghak

CORPORATE SOURCE: Center for Advanced Aerospace Materials, Pohang
 University of Science and Technology, Pohang, 790-784,
 S. Korea

SOURCE: Materials Science & Engineering, A: Structural
 Materials: Properties, Microstructure and Processing
 (2019), 759, 320-328

CODEN: MSAPE3; ISSN: 0921-5093

DIGITAL OBJECT ID: 10.1016/j.msea.2019.05.046

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB An austenitic Hadfield steel sheet shows a relatively low yield strength
 of 0.4-0.5 GPa and serrated flows in spite of excellent tensile strength
 and ductility along with highly-sustained strain hardening. In order to
 overcome the shortcomings, a multi-layer steel (MLS) sheet was
 fabricated by a roll-bonding with an ultra-high-strength martensitic
 hot-press-forming (HPF) steel sheet. Near the Hadfield/HPF interface,
 the carburized and decarburized layers were formed by the carbon
 diffusion from the Hadfield (1.2% of C) to HPF (0.23% of C) layers, and
 could generate a kind of very thin multi-layers of 35 µm in
 thickness. All tensile properties of the Hadfield/HPF MLS sheet (yield
 strength; 946 MPa, tensile strength; 1291 MPa, elongation; 44.5%) were
 superior to those of the Hadfield sheet. Interestingly, the persistent
 elongation up to 44.5%, which is higher than that of the Hadfield steel,
 in the present MLS sheet is a quite unique and interesting characteristic.
 The simultaneous enhancement of strength and ductility of the MLS sheet
 was explained by the contributions of (1) populated twin formation, (2)
 generation of geometrically necessary dislocations (GNDs), and (3)
 increase of back stress inside thin interfacial layers.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				K. Sato, Q. Yu, J. H	
Barbier, D	2009	500	196	Mater Sci Eng A	

Bouaziz, O	2016	18	56	Adv Eng Mater	CAPLUS
Calcagnotto, M	2011	59	658	Acta Mater	CAPLUS
Cetin, A	2012	60	2265	Acta Mater	CAPLUS
Chateau, J	2010	240	012023	J Phys Conf Ser	
Chen, L	2007	47	1804	ISIJ Int	CAPLUS
Curtze, S	2010	58	5129	Acta Mater	CAPLUS
Dini, G	2010	64	15	Mater Lett	CAPLUS
Dinsdale, A	1991	15		Calphad	CAPLUS
Dumay, A	2008	483-4	184	Mater Sci Eng A	
Eshelby, J	1951	42	351	Lond Edinb Dublin Ph	
Fan, D	2009	80	241	Steel Res Int	CAPLUS
Frommeyer, G	2003	43	438	ISIJ Int	CAPLUS
Grassel, O	2000	16	1391	Int J Plast	CAPLUS
Gwon, H	2019	25	594	Met Mater Int	CAPLUS
Han, Y	2012	553	192	Mater Sci Eng A	CAPLUS
Hild, F	2006	42	69	Strain	
Hirth, J	1982			Theory of Dislocatio	
Inoue, J	2008	59	1055	Scripta Mater	CAPLUS
Kang, M	2017	700	387	Mater Sci Eng A	CAPLUS
Kang, S	2010	527	745	Mater Sci Eng A	
Kim, J	2019			Met Mater Int	
Koseki, T	2014	55	227	Mater Trans	CAPLUS
Kubin, L	2003	48	119	Scripta Mater	CAPLUS
Kurt, B	2009	60	1035	Mater Char	CAPLUS
Laws, N	1977	7	91	J Elast	
Lebedkina, T	2009	519	147	Mater Sci Eng A	
Lee, D	1988	23	558	J Mater Sci	CAPLUS
Lee, Y	2000	31	355	Metall Mater Trans A	
Li, Y	2018	731	377	Mater Sci Eng A	CAPLUS
Liu, B	2017	679	172	Mater Sci Eng A	CAPLUS
Ma, X	2016	116	43	Acta Mater	CAPLUS
Matlock, D	2012	15	1	JESTECH	
Morito, S	2005	45	91	ISIJ Int	CAPLUS
Nambu, S	2009	69	1936	Compos Sci Technol	CAPLUS
Nambu, S	2009	60	221	Scripta Mater	CAPLUS
Ojima, M	2009	529	16	Mater Sci Eng A	
Ojima, M	2012	66	139	Scripta Mater	CAPLUS
Pan, B	2009	20	1	Meas Sci Technol	
Park, J	2017	7	40231	Sci Rep	CAPLUS
Park, K	2001	7	95	Met Mater Int	CAPLUS
Saleh, A	2011	528	4537	Mater Sci Eng A	
Scott, C	2011	102	538	Int J Mater Res	CAPLUS
Semiatin, S	1979	10	85	Metall Trans A	
Seok, M	2016	121	164	Acta Mater	CAPLUS
Srivastava, A	2008	43	5654	J Mater Sci	CAPLUS
Ueji, R	2012	47	7946	J Mater Sci	CAPLUS
Ueji, R	2008	59	963	Scripta Mater	CAPLUS
Wu, X	2015	112	14501	Proc Natl Acad Sci U	CAPLUS
Xie, G	2011	52	1709	Mater Trans	CAPLUS
Yan, F	2014	81	487	Acta Mater	CAPLUS
Yang, M	2016	4	145	Mater Res Lett	CAPLUS
Yang, W	1990	25	1821	J Mater Sci	CAPLUS
Zuidema, B	1987	18	1629	Metall Trans A	

IT 2334123-60-1, Fe bal., C 0.23, Mn 1.2, Si 0.41, Cr 0.2, Ti

0-0.06, B 0-0.06, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(ultra-high strength and excellent ductility in multi-layer

steel sheet of austenitic hadfield and martensitic

hot-press-forming steels)

RN 2334123-60-1 CAPLUS

CN Steel, Fe 98,Mn 1.2,Si 0.4,C 0.2,Cr 0.2,B 0-0.1,Ti 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	98	7439-89-6
Mn	1.2	7439-96-5
Si	0.4	7440-21-3
C	0.2	7440-44-0
Cr	0.2	7440-47-3
B	0 - 0.1	7440-42-8

Ti 0 - 0.1 7440-32-6

CC 55-12 (Ferrous Metals and Alloys)
ST ~~steel~~ multilayer sheet strength ductility microstructure
IT Elongation, mechanical
Hot-press molding
Microstructure
Multilayers
Sheet materials
Solid-solid interface
Strain hardening
Stress-strain relationship
Tensile strength
Yield strength
(ultra-high strength and excellent ductility in multi-layer
~~steel~~ sheet of austenitic hadfield and martensitic
hot-press-forming ~~steels~~)
IT 2334123-57-6, Fe bal., C 1.2, Mn 13.6, Si 0.2 2334123-60-1, Fe
bal., C 0.23, Mn 1.2, Si 0.41, Cr 0.2, Ti 0-0.06, B 0-0.06, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(ultra-high strength and excellent ductility in multi-layer
~~steel~~ sheet of austenitic hadfield and martensitic
hot-press-forming ~~steels~~)
OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD
(3 CITINGS)

L13 ANSWER 13 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2019:949375 CAPLUS Full-text
DOCUMENT NUMBER: 170:609630
TITLE: Al plated ~~steel~~ pipe parts by STAF method
INVENTOR(S): Maki, Jun; Fujita, Soshi; Nakamura, Toyomitsu
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 21pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2019073778	A	20190516	JP 2017-201702	20171018
			JP 2017-201702	20171018

PRIORITY APPLN. INFO.:

AB The present invention relates to an Al plated ~~steel~~ pipe parts comprising a hollow portion having a predetd. cross-sectional shape; and a flange portion projecting from the outer surface of the hollow portion; wherein the hollow portion and the flange portion are made of the same ~~steel~~ material as a material, and the surface of the hollow portion and the flange portion is coated with a plating layer contg. at least one of an Al-Fe-based alloy and an Al-Fe-Si-based alloy. The Al plated ~~steel~~ pipe parts has thickness of the plating layer is in the range of 5-50 μ m, and the surface roughness of the plating layer at the flange portion is in the range of 0.3-1.2 μ m as a center line av. roughness Ra defined by JIS B0610. The Al-plated ~~steel~~ pipe part has excellent spot weldability manufd. by processing an Al-plated ~~steel~~ pipe by the STAF method.

IT 2320493-55-6, Aluminum 0-0.1, boron 0.0001-0.1, carbon 0.15-0.5, chromium 0-1.5, iron bal., manganese 0.6-3, nitrogen 0-0.006, phosphorus 0-0.01, silicon 0.01-2, titanium 0.01-0.1
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum plated ~~steel~~ pipe parts by STAF method)
RN 2320493-55-6 CAPLUS
CN Iron alloy, base, Fe 93-99, Mn 0.6-3, Si 0-2, Cr 0-1.5, C 0.2-0.5, Al 0-0.1, B 0-0.1, Ti 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.6 - 3	7439-96-5

Si	0	-	2	7440-21-3
Cr	0	-	1.5	7440-47-3
C	0.2	-	0.5	7440-44-0
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
Ti	0	-	0.1	7440-32-6

IPCI C23C0002-12 [I]; C23C0002-26 [I]; C22C0038-00 [I]; C22C0038-04 [I];
C22C0038-38 [I]; B21D0026-035 [N]; B21D0026-059 [N]; C22C0021-02 [N];
C21D0009-08 [N]

IPCR C23C0002-12 [I]; C22C0038-00 [I]; C22C0038-04 [I]; C22C0038-38 [I];
C23C0002-26 [I]

CC 55-6 (Ferrous Metals and Alloys)

ST aluminum plating ~~steel~~ pipe parts

IT Coating materials
Pipes and Tubes
(aluminum plated ~~steel~~ pipe parts by STAF method)

IT 12043-58-2
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(aluminum plated ~~steel~~ pipe parts by STAF method)

IT 2320493-55-6, Aluminum 0-0.1, boron 0.0001-0.1, carbon 0.15-0.5,
chromium 0-1.5, iron bal., manganese 0.6-3, nitrogen 0-0.006, phosphorus
0-0.01, silicon 0.01-2, titanium 0.01-0.1
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(aluminum plated ~~steel~~ pipe parts by STAF method)

IT 1314-13-2, Zinc oxide, uses 7429-90-5, Aluminum, uses 11114-60-6
11116-16-8, Titanium nitride 11122-26-2 12705-37-2, Chromium nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(aluminum plated ~~steel~~ pipe parts by STAF method)

L13 ANSWER 14 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:903363 CAPLUS Full-text

DOCUMENT NUMBER: 170:588989

TITLE: Piercer plug made of seamless ~~steel~~, and its
manufacturing method

INVENTOR(S): Hidaka, Yasuyoshi; Shirasawa, Naoya; Miyai, Tatsuya

PATENT ASSIGNEE(S): Nippon Steel Corporation, Japan

SOURCE: PCT Int. Appl., 27pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019087510	A1	20190509	WO 2018-JP29879	20180809
CN 111315906	A	20200619	CN 2018-80071094	20180809
BR 112020002943	A2	20200811	BR 2020-112020002943	20180809
EP 3705591	A1	20200909	EP 2018-874192	20180809
US 20200263282	A1	20200820	US 2020-16646739	20200312
PRIORITY APPLN. INFO.:			JP 2017-212753	A 20171102
			WO 2018-JP29879	W 20180809

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The piercer plug comprises the following component in mass (%): 0.15-0.3
of carbon, 0.4-1.2 of silicon, 0.2-1.5 of manganese, 0.1-2 of nickel, 0-4
each of molybdenum and tungsten, 1-4 of chromium, 0-0.2 of boron, 0-1 of
niobium, 0-1 of vanadium, 0-1 of titanium, and iron being balance and
impurities. The piercer plug further comprises a tip section and a body
section made of the same material; wherein the body section includes a
cylindrical unit which is a hole for attaching a bar and the tip section
is harder than the cylindrical unit. The manufg. method of piercer plug
comprises a protective film forming on the surface of the piercer plug to
the heating, wherein the protective film is a thermal sprayed coating
and a buildup layer. According to the present invention, it is possible
to provide a highly recyclable piercer plug.

IT 2315454-12-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)

(piercer plug made of seamless ~~steel~~, and its manufg. method)

RN 2315454-12-5 CAPLUS

CN Iron alloy, base, Fe 82-97,Cr 1-4,Mo 0-4,W 0-4,Ni 0.1-2,Mn 0.2-1.5,Si 0.4-1.2,Nb 0-1,Ti 0-1,V 0-1,C 0.2-0.3,B 0-0.2 (CA INDEX NAME)

Component	Component Percent		Component Registry Number
=====+=====+=====			
Fe	82	- 97	7439-89-6
Cr	1	- 4	7440-47-3
Mo	0	- 4	7439-98-7
W	0	- 4	7440-33-7
Ni	0.1	- 2	7440-02-0
Mn	0.2	- 1.5	7439-96-5
Si	0.4	- 1.2	7440-21-3
Nb	0	- 1	7440-03-1
Ti	0	- 1	7440-32-6
V	0	- 1	7440-62-2
C	0.2	- 0.3	7440-44-0
B	0	- 0.2	7440-42-8

IPCI C22C0038-00 [I]; C21D0009-00 [I]; C22C0038-54 [I]
IPCR C22C0038-00 [I]; C21D0009-00 [I]; C22C0038-54 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST carbon boron seamless steel piercer plug
IT 2315454-12-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(piercer plug made of seamless steel, and its manufg. method)

L13 ANSWER 15 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2019:807393 CAPLUS Full-text
DOCUMENT NUMBER: 170:538936
TITLE: Manufacture of steel components having a metal coating protecting it against corrosion
INVENTOR(S): Banik, Janko; Koeyer, Maria; Rosenstock, Dirk; Ruthenberg, Manuela
PATENT ASSIGNEE(S): Thyssenkrupp Steel Europe AG, Germany; Thyssenkrupp AG
SOURCE: PCT Int. Appl., 26pp.; Chemical Indexing Equivalent to 170:538935 (DE)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:					
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
-----	----	-----	-----	-----	
WO 2019076720	A1	20190425	WO 2018-EP77692	20181011	
DE 102017218704	A1	20190425	DE 2017-102017218704	20171019	
CN 110997951	A	20200410	CN 2018-80049166	20181011	
EP 3697936	A1	20200826	EP 2018-804228	20181011	
US 20200216925	A1	20200709	US 2020-16647894	20200317	
PRIORITY APPLN. INFO.:			DE 2017-102017218704	A	20171019
			WO 2018-EP77692	W	20181011

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB A method for producing a steel component comprising a steel substrate and an aluminum alloy-based anti-corrosion coating, is described for use in the automotive sector.

RETABLE					
Referenced Author (RAU)	Year	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====+=====+=====+=====+=====					
BANIK JANKO	2016			EP 2993248 A1	CAPLUS
COBO SEBASTIAN	2017			US 20170253941 A1	
KUSUMI K	2007			EP 1767286 A1	CAPLUS
MAKI JUN	2014			EP 2695963 A1	CAPLUS
ROSENSTOCK DIRK	2018			WO 2018234102 A1	CAPLUS

IT 2307271-66-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; manuf. of steel components having a metal coating protecting it against corrosion)

RN 2307271-66-3 CAPLUS

CN Iron alloy, base, Fe 94-99,Mn 0.5-3,Cr 0-1,C 0.1-0.5,Si 0.1-0.5,Ti 0-0.2,Al 0-0.1,B 0-0.1,Nb 0-0.1,P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C21D0001-76 [I]; B21D0022-02 [I]; B21D0022-20 [I]; C21D0007-13 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C23C0002-28 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C21D0001-673 [I]

IPCR C21D0001-76 [I]; B21D0022-02 [I]; B21D0022-20 [I]; C21D0001-673 [I]; C21D0007-13 [I]; C21D0009-46 [I]; C21D0009-48 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C23C0002-28 [I]

CC 55-10 (Ferrous Metals and Alloys)
Section cross-reference(s): 56

ST steel metal prevention corrosion coating

IT Automobile bodies
(chassis; manuf. of steel components having a metal coating protecting it against corrosion)

IT Anticorrosive coating materials
Automobile bodies
Automotive bumpers
(manuf. of steel components having a metal coating protecting it against corrosion)

IT 1273096-81-3P, Aluminum alloy 2307271-67-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(anti-corrosion coatings; manuf. of steel components having a metal coating protecting it against corrosion)

IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in steel; manuf. of steel components having a metal coating protecting it against corrosion)

IT 12597-69-2P, Steel, preparation 2307271-66-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; manuf. of steel components having a metal coating protecting it against corrosion)

L13 ANSWER 16 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:805627 CAPLUS Full-text

DOCUMENT NUMBER: 170:527030

TITLE: Enamelling of high-strength steels

INVENTOR(S): Myslowicki, Stefan

PATENT ASSIGNEE(S): ThyssenKrupp Steel Europe AG, Germany; ThyssenKrupp AG

SOURCE: PCT Int. Appl., 28pp.; Chemical Indexing Equivalent to 170:527029 (DE)
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2019076717	A1	20190425	WO 2018-EP77686	20181011
DE 102017218434	A1	20190418	DE 2017-102017218434	20171016
EP 3697545	A1	20200826	EP 2018-786281	20181011
PRIORITY APPLN. INFO.:			DE 2017-102017218434 A	20171016
			WO 2018-EP77686	20181011

AB A shaped part having at least two layers, comprises at least one layer

made of high-strength steel with a tensile strength ≥ 500 MPa and a hardness ≥ 160 HV, and at least one layer made of a steel that has an enamel layer on the outer side. The shaped part are suitable for producing pipelines, pressure vessels, reactors or in app. engineering, in particular for the transport of aq. and/or corrosive media.

IT 2306234-82-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(enamelling of high-strength steels)
RN 2306234-82-0 CAPLUS
CN Iron alloy, base, Fe 85-99, Mn 0.5-3, Al 0-3, Si 0.1-2.5, P 0-1.5, Cr 0-1, Mo 0-1, V 0-1, Ti 0-0.8, Nb 0-0.5, C 0-0.4, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	85 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Al	0 - 3	7429-90-5
Si	0.1 - 2.5	7440-21-3
P	0 - 1.5	7723-14-0
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
Ti	0 - 0.8	7440-32-6
Nb	0 - 0.5	7440-03-1
C	0 - 0.4	7440-44-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B21B0001-38 [I]; C21D0008-02 [I]; C21D0009-46 [I]; C22C0038-02 [I]; C23D0005-00 [I]

IPCR B21B0001-38 [I]; C21D0008-02 [I]; C21D0009-46 [I]; C22C0038-02 [I]; C23D0005-00 [I]

CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 57

ST enamel strength steel bilayer

IT Enameling
Enamels (vitreous)
Pipelines
Pressure vessels
Reactors
(enamelling of high-strength steels)

IT 2306234-83-1P, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(enameled; enamelling of high-strength steels)

IT 12597-69-2P, Steel, preparation 59816-66-9P, preparation
2306234-82-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(enamelling of high-strength steels)

L13 ANSWER 17 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:802752 CAPLUS Full-text

DOCUMENT NUMBER: 170:538935

TITLE: Manufacture of steel components having a metal coating protecting it against corrosion

INVENTOR(S): Banik, Janko; Koeyer, Maria; Rosenstock, Dirk; Ruthenberg, Manuela

PATENT ASSIGNEE(S): Thyssenkrupp AG, Germany; Thyssenkrupp Steel Europe AG

SOURCE: Ger. Offen., 17pp.; Chemical Indexing Equivalent to 170:538936 (WO)
CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017218704	A1	20190425	DE 2017-102017218704	20171019

WO 2019076720	A1	20190425	WO 2018-EP77692	20181011
CN 110997951	A	20200410	CN 2018-80049166	20181011
EP 3697936	A1	20200826	EP 2018-804228	20181011
US 20200216925	A1	20200709	US 2020-16647894	20200317
PRIORITY APPLN. INFO.:			DE 2017-102017218704 A	20171019
			WO 2018-EP77692	W 20181011

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A method for producing a ~~steel~~ component comprising a ~~steel~~ substrate and an aluminum alloy-based anti-corrosion ~~coating~~, is described for use in the automotive sector.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				EP 1767286 A1	CAPLUS
Anon				US 20120085467 A1	CAPLUS
Anon				EP 2377965 A2	CAPLUS
Anon				EP 2993248 A1	CAPLUS

IT 2307271-66-3P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (strips; manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

RN 2307271-66-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C22C0038-04 [I]; C23C0002-12 [I]; C23C0002-26 [I]; C21D0001-673 [I]

IPCR C22C0038-04 [I]; C21D0001-673 [I]; C23C0002-12 [I]; C23C0002-26 [I]

CC 55-10 (Ferrous Metals and Alloys)
 Section cross-reference(s): 56

ST ~~steel~~ metal prevention corrosion ~~coating~~

IT Automobile bodies
 (chassis; manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

IT Anticorrosive ~~coating~~ materials
 Automobile bodies
 Automotive bumpers
 (manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

IT 1273096-81-3P, Aluminum alloy 2307271-67-4P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (anti-corrosion ~~coatings~~; manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

IT 1333-74-0, Hydrogen, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (in ~~steel~~; manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

IT 12597-69-2P, ~~Steel~~, preparation 2307271-66-3P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (strips; manuf. of ~~steel~~ components having a metal ~~coating~~ protecting it against corrosion)

ACCESSION NUMBER: 2019:746016 CAPLUS Full-text
DOCUMENT NUMBER: 170:527029
TITLE: Enamelling of high-strength steels
INVENTOR(S): Myslowicki, Stefan
PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG
SOURCE: Ger. Offen., 20pp.; Chemical Indexing Equivalent to
170:527030 (WO)
CODEN: GWXXBX

DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017218434	A1	20190418	DE 2017-102017218434	20171016
WO 2019076717	A1	20190425	WO 2018-EP77686	20181011
EP 3697545	A1	20200826	EP 2018-786281	20181011

PRIORITY APPLN. INFO.: DE 2017-102017218434 A 20171016
WO 2018-EP77686 W 20181011

AB A shaped part having at least two layers, comprises at least one layer made of high-strength steel with a tensile strength ≥ 500 MPa and a hardness ≥ 160 HV, and at least one layer made of a steel that has an enamel layer on the outer side. The shaped part are suitable for producing pipelines, pressure vessels, reactors or in app. engineering, in particular for the transport of aq. and/or corrosive media.

RETABLER

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				DE 102008022709 A1	CAPLUS
Anon				DE 1533303 C2	
Anon				EP 2227574 B1	CAPLUS

IT 2306234-82-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(enamelling of high-strength steels)

RN 2306234-82-0 CAPLUS

CN Iron alloy, base, Fe 85-99, Mn 0.5-3, Al 0-3, Si 0.1-2.5, P 0-1.5, Cr 0-1, Mo 0-1, V 0-1, Ti 0-0.8, Nb 0-0.5, C 0-0.4, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	85 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Al	0 - 3	7429-90-5
Si	0.1 - 2.5	7440-21-3
P	0 - 1.5	7723-14-0
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
V	0 - 1	7440-62-2
Ti	0 - 0.8	7440-32-6
Nb	0 - 0.5	7440-03-1
C	0 - 0.4	7440-44-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI C23D0005-00 [I]; B23K0020-04 [I]

IPCR C23D0005-00 [I]; B23K0020-04 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 57

ST enamel strength steel bilayer

IT Enameling

Enamels (vitreous)

Pipelines

Pressure vessels

Reactors

(enamelling of high-strength steels)

IT 2306234-83-1P, preparation

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(enameled; enamelling of high-strength steels)

IT 12597-69-2P, Steel, preparation 59816-66-9P, preparation
2306234-82-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(enamelling of high-strength steels)

L13 ANSWER 19 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:570060 CAPLUS Full-text
DOCUMENT NUMBER: 170:493791
TITLE: Method for manufacturing hot stamped parts with
aluminum-silicon alloy coating and hot stamped parts
INVENTOR(S): Tan, Ning; Fu, Jiang; Hong, Jiayao; Fang, Xuehua
PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 13pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 109518114	A	20190326	CN 2018-11035118	20180906
WO 2020030200	A1	20200213	WO 2019-CN104708	20190906
EP 3770295	A1	20210127	EP 2019-847997	20190906
PRIORITY APPLN. INFO.:			CN 2018-10896744	A 20180808
			CN 2018-11035118	A 20180906
			WO 2019-CN104708	W 20190906

AB The title method comprises the following steps of: processing steel
plate coated with aluminum-silicon alloy coating to form a blank of a
desired shape of the part, heat treating the blank, and hot stamping. The
blank heat treatment adopts two-stage or three-stage heating and heat
preservation, and the heating and heat preservation are stepwise heating.
The steel plate coated with aluminum-silicon alloy coating include a
substrate and an aluminum-silicon alloy coating on at least one surface
thereof. The method fully considers the characteristics of the
aluminum-silicon coating, is able to effectively solve the problem of
roll banding of the aluminum-silicon coating, reduces the nodulation
probability of the roller of the heat treatment furnace, improves the
service life of the roller, and ensures the integrity of the coating of
the hot stamped part as well as the mech. property, welding property,
coating property and corrosion resisting property of the part.

IT 2305367-85-3P, Aluminum 0-0.3, boron 0-0.1, carbon 0.04-0.8,
chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1.2, sulfur
0-0.1, titanium 0-0.5, iron bal.
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(method for manufg. hot stamped parts with aluminum-silicon alloy
coating and hot stamped parts)

RN 2305367-85-3 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1.2, C 0-0.8, Ti 0-0.5, Al
0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1.2	7440-21-3
C	0 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI C23C0002-12; C23C0002-40; C22C0038-02; C22C0038-04; C22C0038-06;
C22C0038-28; C22C0038-32; C22C0038-38; C21D0001-26; C21D0008-00;
B21D0022-02

IPCR C23C0002-12 [I]; B21D0022-02 [I]; C21D0001-26 [I]; C21D0008-00 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-28 [I];

CC C22C0038-32 [I]; C22C0038-38 [I]; C23C0002-40 [I]
 56-11 (Nonferrous Metals and Alloys)
 ST hot stamping steel aluminum silicon coating
 IT Cooling
 Heat treatment
 (method for manufg. hot stamped parts with aluminum-silicon alloy
 coating and hot stamped parts)
 IT Metalworking
 (stamping; method for manufg. hot stamped parts with aluminum-silicon
 alloy coating and hot stamped parts)
 IT 2305367-85-3P, Aluminum 0-0.3, boron 0-0.1, carbon 0.04-0.8,
 chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1.2, sulfur
 0-0.1, titanium 0-0.5, iron bal. 2305367-88-6P, Iron 0-4, silicon 4-14,
 aluminum bal.
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (method for manufg. hot stamped parts with aluminum-silicon alloy
 coating and hot stamped parts)

L13 ANSWER 20 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2019:340815 CAPLUS Full-text

DOCUMENT NUMBER: 170:379972

TITLE: Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion
 resistance

INVENTOR(S): Bi, Wenzhen; Hong, Jiyao; Wang, Li

PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 7pp.; Chemical Indexing
 Equivalent to 173:85818 (WO)

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 109365606	A	20190222	CN 2018-11453322	20181130
WO 2020108593	A1	20200604	WO 2019-CN121859	20191129

PRIORITY APPLN. INFO.: CN 2018-11453322 A 20181130

AB The invention discloses a hot stamping method of zinc-based coated
 steel plate or steel strip with excellent corrosion resistance, which
 improves the corrosion resistance of the steel plate or the steel
 strip and avoids cracking of the substrate. The above steel plate or
 steel strip includes the following components in percentage by wt.: C
 0.1-0.8%, Si 0.05-2.0%, Mn 0.5-3.0%, P <0.1%, S <0.05%, Al <0.1%, N
 <0.01%, and balance of Fe and impurities, and also includes at least one
 of Cr 0.01-1.0%, Mo 0.01-1.0%, Ti <0.2%, Nb 0.01-0.08%, V 0.01-1.0%, and B
 0.005-0.08%; the zinc-based coating includes the following components in
 percentage by wt.: Al 0.15%-6.5%, Mg 0.2-7%, RE <0.2%, Sr 0.002-0.2%, and
 balance of Zn and impurities, and the coating further includes at least
 one or more of Mn, Cr, Al, and Mg, and the total amt. thereof is more than
 0.1%.

IT 2293976-55-1, Aluminum 0-0.1, boron 0.005-0.1, carbon 0.1-0.8,
 chromium 0.01-1, iron bal., manganese 0.5-3, molybdenum 0.01-1, niobium
 0.01-0.1, phosphorus 0-0.1, silicon 0.05-2, titanium 0-0.2, vanadium
 0.01-1

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
 TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)

RN 2293976-55-1 CAPLUS

CN Iron alloy, base, Fe 91-99, Mn 0.5-3, Si 0-2, Cr 0-1, Mo 0-1, V 0-1, C
 0.1-0.8, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3

Mo	0	-	1	7439-98-7
V	0	-	1	7440-62-2
C	0.1	-	0.8	7440-44-0
Ti	0	-	0.2	7440-32-6
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
Nb	0	-	0.1	7440-03-1
P	0	-	0.1	7723-14-0

IPCI B21D0022-02; C23C0002-06; C23C0002-40; C22C0018-00; C21D0008-02
 IPCR B21D0022-02 [I]; C21D0008-02 [I]; C22C0018-00 [I]; C23C0002-06 [I];
 C23C0002-40 [I]
 CC 55-6 (Ferrous Metals and Alloys)
 ST corrosion resistance zinc alloy coating steel hot stamping
 IT Anticorrosive coating materials
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)
 IT Metalworking
 (stamping, hot; Hot stamping method of zinc-based coated
 steel plate or steel strip with excellent corrosion
 resistance)
 IT 2293976-55-1, Aluminum 0-0.1, boron 0.005-0.1, carbon 0.1-0.8,
 chromium 0.01-1, iron bal., manganese 0.5-3, molybdenum 0.01-1, niobium
 0.01-0.1, phosphorus 0-0.1, silicon 0.05-2, titanium 0-0.2, vanadium
 0.01-1
 RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
 TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)
 IT 2226545-76-0
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (Hot stamping method of zinc-based coated steel
 plate or steel strip with excellent corrosion resistance)
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L13 ANSWER 21 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2018:2601319 CAPLUS Full-text
 DOCUMENT NUMBER: 170:116258
 TITLE: Method for producing a steel automotive component
 provided with an aluminum alloy anti-corrosion coating
 Rosenstock, Dirk; Banik, Janko
 INVENTOR(S): ThyssenKrupp Steel Europe AG, Germany; ThyssenKrupp AG
 PATENT ASSIGNEE(S): PCT Int. Appl., 25pp.; Chemical Indexing Equivalent to
 SOURCE: 170:116256 (DE)
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018234102	A1	20181227	WO 2018-EP65498	20180612
DE 102017210201	A1	20181220	DE 2017-102017210201	20170619
EP 3642371	A1	20200429	EP 2018-738199	20180612

PRIORITY APPLN. INFO.: DE 2017-102017210201 A 20170619
 WO 2018-EP65498 W 20180612

AB A method is described for producing a corrosion-resistant steel
 automotive component comprising a substrate and an anticorrosive coating.

IT 2254829-63-3P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (strips; method for producing a steel automotive component
 provided with an aluminum alloy anti-corrosion coating)

RN 2254829-63-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti
 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component	Component
	Percent	Registry Number

```

IPCI C21D0008-02 [I]; C23C0002-12 [I]; C21D0009-46 [I]; C21D0001-673 [I];
B32B0015-01 [I]
IPCR C21D0008-02 [I]; B32B0015-01 [I]; C21D0001-673 [I]; C21D0009-46 [I];
C23C0002-12 [I]
CC 55-10 (Ferrous Metals and Alloys)
Section cross-reference(s): 56
ST steel automobile metal coating corrosion aluminum alloy
IT Anticorrosive coating materials
(metallic; method for producing a steel automotive component
provided with an aluminum alloy anti-corrosion coating)
IT Automobile bodies
Automobile doors
Automobile roofs
Automotive bumpers
Heat treatment
(method for producing a steel automotive component provided
with an aluminum alloy anti-corrosion coating)
IT 254455-65-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(coatings; method for producing a steel automotive
component provided with an aluminum alloy anti-corrosion
coating)
IT 870820-47-6P, 22MnB5 2254829-63-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(strips; method for producing a steel automotive component
provided with an aluminum alloy anti-corrosion coating)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

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L13 ANSWER 22 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:2544202 CAPLUS Full-text
DOCUMENT NUMBER: 170:116256
TITLE: Method for producing a steel automotive component
provided with an aluminum alloy anti-corrosion coating
INVENTOR(S): Rosenstock, Dirk; Banik, Janko
PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG
SOURCE: Ger. Offen., 16pp.; Chemical Indexing Equivalent to
170:116258 (WO)

DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102017210201	A1	20181220	DE 2017-102017210201	20170619
CN 109136775	A	20190104	CN 2017-10986828	20171020
WO 2018234102	A1	20181227	WO 2018-EP65498	20180612
EP 3642371	A1	20200429	EP 2018-738199	20180612

PRIORITY APPLN. INFO.:	DE 2017-102017210201	A	20170619
	WO 2018-EP65498	W	20180612

AB A method is described for producing a corrosion-resistant steel automotive component comprising a substrate and an anticorrosive coating.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
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Anon					DE 102007061489 A1	CAPLUS
Anon					DE 102009007909 A1	CAPLUS
Anon					WO 2015036151 A1	CAPLUS
Anon					WO 2016034476 A1	CAPLUS

IT 2254829-63-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; method for producing a steel automotive component provided with an aluminum alloy anti-corrosion coating)

RN 2254829-63-3 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C22C0038-04 [I]; C21D0008-02 [I]; C23C0002-12 [I]

IPCR C22C0038-04 [I]; C21D0008-02 [I]; C23C0002-12 [I]

CC 55-10 (Ferrous Metals and Alloys)

Section cross-reference(s): 56

ST steel automobile metal coating corrosion aluminum alloy

IT Anticorrosive coating materials

(metallic; method for producing a steel automotive component provided with an aluminum alloy anti-corrosion coating)

IT Automobile bodies

Automobile doors

Automobile roofs

Automotive bumpers

Heat treatment

(method for producing a steel automotive component provided with an aluminum alloy anti-corrosion coating)

IT 254455-65-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(coatings; method for producing a steel automotive component provided with an aluminum alloy anti-corrosion coating)

IT 870820-47-6P, 22MnB5 2254829-63-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(strips; method for producing a steel automotive component provided with an aluminum alloy anti-corrosion coating)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 23 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:2321302 CAPLUS Full-text

DOCUMENT NUMBER: 170:49880

TITLE: Steel-based electromagnetic shield multilayer screen products

INVENTOR(S): Wieschalla, Vanessa; Nierhoff, Daniel; Wolske, Vanessa; Becker, Jens-Ulrik

PATENT ASSIGNEE(S): ThyssenKrupp AG, Germany; ThyssenKrupp Steel Europe AG

SOURCE: Ger., 17pp.
CODEN: GWXXAW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

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Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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DE 102017216975 B3 20181129 DE 2017-102017216975 20170925
WO 2019057547 A1 20190328 WO 2018-EP74424 20180911
PRIORITY APPLN. INFO.: DE 2017-102017216975 A 20170925
AB An electromagnetic radiation shielding multilayer material is manufd. for
shielding from electromagnetic radiation, static elec. and/or static
magnetic fields.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				EP 1426982 A1	CAPLUS
Anon				WO 1991012960 A1	
Anon				DE 3710322 A1	CAPLUS

IT 2253656-70-9P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(layers; steel-based electromagnetic shield
multilayer screen products)

RN 2253656-70-9 CAPLUS

CN Iron alloy, base, Fe 94-100, Mn 0.1-3, C 0-0.5, Cr 0-0.5, Cu 0-0.5, Si 0-0.5, Ti
0-0.3, Ni 0-0.2, Al 0-0.1, As 0-0.1, B 0-0.1, Mo 0-0.1, N 0-0.1, Nb 0-0.1, P
0-0.1, S 0-0.1, Sn 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	94 - 100	7439-89-6
Mn	0.1 - 3	7439-96-5
C	0 - 0.5	7440-44-0
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Si	0 - 0.5	7440-21-3
Ti	0 - 0.3	7440-32-6
Ni	0 - 0.2	7440-02-0
Al	0 - 0.1	7429-90-5
As	0 - 0.1	7440-38-2
B	0 - 0.1	7440-42-8
Mo	0 - 0.1	7439-98-7
N	0 - 0.1	17778-88-0
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
S	0 - 0.1	7704-34-9
Sn	0 - 0.1	7440-31-5
V	0 - 0.1	7440-62-2

IPCI C22C0038-02 [I]; H05K0009-00 [I]; C22C0038-04 [I]; C22C0038-18 [I]

IPCR C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-18 [I]; H05K0009-00 [I]

CC 55-3 (Ferrous Metals and Alloys)

Section cross-reference(s): 73, 76, 77

ST multilayer screen electromagnetic shield stainless steel alloy

IT Electromagnetic shields

Hot rolling

Multilayers

(steel-based electromagnetic shield multilayer screen
products)

IT 2253656-70-9P 2253656-71-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(layers; steel-based electromagnetic shield
multilayer screen products)

L13 ANSWER 24 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1950769 CAPLUS Full-text

DOCUMENT NUMBER: 169:495369

TITLE: Microstructural features and corrosion analysis of
A517 steel joint processed by friction stir welding

AUTHOR(S): Ansari pour, Morteza; Soltanipour, Abdol Reza; Dehnavi,
Mohamad Reza

CORPORATE SOURCE: Materials Engineering Department, Malek Ashtar
University of Technology, Shahin Shahr, Iran

SOURCE: Materials Research Express (2018), 5(6),
066543/1-066543/13
CODEN: MREAC3; ISSN: 2053-1591
DIGITAL OBJECT ID: 10.1088/2053-1591/aacc80
PUBLISHER: IOP Publishing Ltd.
DOCUMENT TYPE: Journal; (online computer file)
LANGUAGE: English

AB Microstructural observations of friction stir welds of A517 (B) steel showed that within the range of welding variables, martensite phase was hindered. Stir zone microstructure displayed coarse-grained upper bainite assocd. with granular bainite. HAZ consisted of decompd. bainite morphol. of lath-like and equiaxed. Electron backscatter diffraction anal. showed a random oriented recrystd. grain. The corrosion behavior in 3.5 wt% NaCl soln. revealed neg. shift of corrosion potential with increasing of traverse speed. However, the effect of welding parameters on cathodic behavior was more predominant than that on anodic behavior; assocd. with the microstructural alterations. Pitting of corrosion rust layer was identified as the main mechanism of corrosion attack in base material and welds. Although, corrosion c.d. of weld in all of the applied welding condition was slightly lower than that in the base material, however, this study provides recommendation for application of A517 steel jointed by friction stir welding in marine environment.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bhadeshia, H	1999	A273-	58	Mater Sci Eng	CAPLUS
Casalino, G	2012		8239	Proc of SPIE-The Int	
Casalino, G	2014		8963	Proc of SPIE-The Int	
Chen, Y	2005	398	47	Mater Sci Eng A	
Choi, Y	2005	391	162	J Alloys Compd	CAPLUS
Cui, H	2016	681	426	J of Alloys and Comp	CAPLUS
Gao, K	2010	52	3428	Corros Sci	CAPLUS
Ghosh, M	2013	22	3890	J Mater Eng Perform	CAPLUS
Huang, H	1994	36	1027	Corros Sci	CAPLUS
Lee, W	2004	58	1041	Mater Lett	CAPLUS
Li, L	2012	7	3773	Int J Electrochem Sc	CAPLUS
Lu, B	2009	57	41	Acta Mater	CAPLUS
Manvatkar, V	2015	94	36	Scr Mater	CAPLUS
Medina, G	2016	21	146	Soldagem & Inspecao	
Meshram, S	2017	25	94	Journal of Manufactu	
Mishra, R	2005	50	1	Mater Sci Eng R	
Nelson, T	2016	231	66	Mater Process Techno	CAPLUS
Park, H	2004	371A	160	Mater Sci Eng	
Paul, C	2015	10	10246	Int J Electrochem Sc	
Ramirez, A	2013		75	Proc of the 1st Int	
Ren, R	2012	85	283	Electrochimica Acta	CAPLUS
Sato, Y	2005	53	637	Acta Mater	CAPLUS
Sato, Y	2001	32A	3033	Metall Mater Trans	CAPLUS
Sherif, E	2015	10	34	Int J Electrochem Sc	CAPLUS
Sherif, E	2011	129	961	Mater Chem Phy	CAPLUS
Sutton, M	2003	70	2215	Eng Fract Mech	
Sutton, M	2003	354A	6	Mater Sci Eng	
Wang, H	2015	10	5827	Int J Electrochem Sc	CAPLUS
Wang, X	2014	9	4574	Int J Electrochem Sc	
Wang, X	2014	21	474	J Nat Gas Sci Eng	CAPLUS
Wert, J	2003	49	607	Scr Mater	CAPLUS
Yan, J	2005	10	725	Sci Tech Weld Joinin	CAPLUS
Zajac, S	2005		387	Proc of the Int Conf	CAPLUS
Zhang, Q	2002	77	603	Mater Chem Phys	
Zhang, R	2010	41A	1448	Metall Mater Trans	CAPLUS
Zhang, S	2013	75	293	Corros Sci	CAPLUS

IT 52346-86-8, A517B, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(microstructural features and corrosion anal. of A517 steel joint processed by friction stir welding)

RN 52346-86-8 CAPLUS

CN Steel, (UNS K11630) (CA INDEX NAME)

Component Component
Percent Registry Number

=====+=====+=====				
Fe	97	-	98	7439-89-6
Mn	0.70	-	1.00	7439-96-5
Cr	0.40	-	0.65	7440-47-3
Si	0.20	-	0.35	7440-21-3
Mo	0.15	-	0.25	7439-98-7
C	0.12	-	0.21	7440-44-0
V	0.03	-	0.08	7440-62-2
S	0	-	0.04	7704-34-9
P	0	-	0.035	7723-14-0
Ti	0.01	-	0.03	7440-32-6
B	0.0005	-	0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)

ST ~~steel~~ joint processed friction stir welding microstructural feature corrosion

IT Corrosion
Corrosion resistance
Current density
Electric current-potential relationship
Friction welding
Friction welds
Grain size
Microstructure
Recrystallization
(microstructural features and corrosion anal. of A517 ~~steel~~ joint processed by friction stir welding)

IT 12173-93-2, Martensite, formation (nonpreparative) 12427-23-5, Bainite
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(microstructural features and corrosion anal. of A517 ~~steel~~ joint processed by friction stir welding)

IT ~~52346-86-8~~, A517B, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(microstructural features and corrosion anal. of A517 ~~steel~~ joint processed by friction stir welding)

L13 ANSWER 25 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1916470 CAPLUS Full-text

DOCUMENT NUMBER: 169:454845

TITLE: Aluminum alloy plated electric resistance welded pipe for quenching and method of manufacturing aluminum plated hollow member

INVENTOR(S): Maki, Jun; Fujita, Soshi; Nakamura, Toyomitsu

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Tokkyo Koho, 23pp.
CODEN: JTXXXF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 6406475	B1	20181017	JP 2018-513042	20171120
WO 2019097729	A1	20190523	WO 2017-JP41697	20171120
CN 111247266	A	20200605	CN 2017-80096110	20171120
IN 202017014250	A	20200814	IN 2020-17014250	20200331
US 20200347489	A1	20201105	US 2020-16753961	20200406
			WO 2017-JP41697	W 20171120

PRIORITY APPLN. INFO.:

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The aluminum alloy plated elec. resistance welded pipe for quenching comprises a base material made of tubular ~~steel~~ plate and an elec. resistance welded part provided in abutting part of ~~steel~~ plate and extending in longitudinal direction. The base material comprises in mass%: carbon 0.06-0.5, silicon 0.01-0.8, manganese 0.6-3, phosphorous 0-0.05, sulfur 0-0.05, aluminum 0-0.1, oxygen 0-0.006, nitrogen 0-0.02, titanium 0.01-0.1, boron 0-0.1, niobium 0-0.1, vanadium 0-0.3, chromium 0-0.5, molybdenum 0-0.5, nickel 0-0.5, copper 0-0.5, calcium 0-0.005, rare earth metal 0-0.005, iron balance and impurities. The base material is positioned on the surface of ~~steel~~ sheet and has an intermetallic compd. layer contg. an aluminum-iron-silicon based intermetallic compd. and an

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

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aluminum plating layer located on the surface of the intermetallic compd. layer and contg. aluminum and silicon. The thickness of intermetallic compd. layer is X (μm), the thickness of aluminum layer is Y (μm), and when the thickness of steel pipe is t (mm) and outer diam. of steel pipe is D (mm), the following formula is satisfied: $70 \times X/D \leq Y/t \leq 30$. The method of manufg. aluminum plated hollow member comprises: positioning the base material on the surface of steel sheet, heating aluminum-plated elec. resistance welded pipe, forming the heated aluminum-plated elec. resistance welded pipe into desired shape, and rapidly cooling the aluminum plating elec. resistance welded pipe. According to the present invention, it is possible to manuf. high strength aluminum plated hollow member by hot working, and it is possible to obtain part that has reduced wt.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
====+	====+	====+	====+	====+	====+
Anon	1983			JP 58204179 A	CAPLUS
Anon	2008			JP 2008069398 A	CAPLUS
Anon	2009			WO 2009131233 A1	CAPLUS
Anon	2014			JP 2014118628 A	CAPLUS
Anon	2017			JP 2017026147 A	CAPLUS

IT 2247299-93-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum alloy plated elec. resistance welded pipe for quenching and method of manufg. aluminum plated hollow member)

RN 2247299-93-8 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.6-3, Si 0-0.8, C 0.1-0.5, Cr 0-0.5, Cu 0-0.5, Mo 0-0.5, Ni 0-0.5, V 0-0.3, Al 0-0.1, B 0-0.1, Nb 0-0.1, Ti 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
====+	====+	====+
Fe	93 - 99	7439-89-6
Mn	0.6 - 3	7439-96-5
Si	0 - 0.8	7440-21-3
C	0.1 - 0.5	7440-44-0
Cr	0 - 0.5	7440-47-3
Cu	0 - 0.5	7440-50-8
Mo	0 - 0.5	7439-98-7
Ni	0 - 0.5	7440-02-0
V	0 - 0.3	7440-62-2
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
Ti	0 - 0.1	7440-32-6

IPCI C23C0002-28 [I]; C23C0002-12 [I]; C23C0002-40 [I]; C23C0002-26 [I];
C23C0028-00 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-08 [N];
C21D0001-18 [N]; C21D0009-50 [N]; C22C0021-00 [N]

IPCR C23C0002-28 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C23C0002-12 [I];
C23C0002-26 [I]; C23C0002-40 [I]; C23C0028-00 [I]

CC 56-6 (Nonferrous Metals and Alloys)

IT 2247299-93-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum alloy plated elec. resistance welded pipe for quenching and method of manufg. aluminum plated hollow member)

L13 ANSWER 26 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:1651585 CAPLUS Full-text

DOCUMENT NUMBER: 169:330484

TITLE: Method for producing a hot-formed coated steel product

INVENTOR(S): Beentjes, Petrus Cornelis Jozef; Van Schoonevelt, Hugo

PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.

SOURCE: PCT Int. Appl., 28pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018158166	A1	20180907	WO 2018-EP54600	20180223
CA 3051002	A1	20180907	CA 2018-3051002	20180223
MX 2019010192	A	20191002	MX 2019-10192	20180223
CN 110352260	A	20191018	CN 2018-80014405	20180223
KR 2019124211	A	20191104	KR 2019-7023413	20180223
EP 3589772	A1	20200108	EP 2018-714700	20180223
JP 2020510755	T	20200409	JP 2019-546825	20180223
BR 112019015673	A2	20200707	BR 2019-112019015673	20180223
US 20200165712	A1	20200528	US 2019-16485606	20190813
IN 201947037974	A	20190927	IN 2019-47037974	20190920
PRIORITY APPLN. INFO.:			EP 2017-158418	A 20170228
			EP 2017-158419	A 20170228
			WO 2018-EP54600	W 20180223

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to an Al-Si-alloy coated steel strip for hot press forming and to a method for producing the Al-Si-alloy coated steel strip in a continuous coating process.

IT 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium 0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for producing hot-formed coated steel product)

RN 2243499-83-2 CAPLUS

CN Iron alloy, base, Fe 79-100, Mn 0.4-4, Cr 0-4, Al 0-3, Si 0-3, Cu 0-2, Ni 0-2, Mo 0-1, C 0-0.5, V 0-0.5, W 0-0.5, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	79 - 100	7439-89-6
Mn	0.4 - 4	7439-96-5
Cr	0 - 4	7440-47-3
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Mo	0 - 1	7439-98-7
C	0 - 0.5	7440-44-0
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]

IPCR C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]

CC 56-7 (Nonferrous Metals and Alloys)

ST hot formed aluminum silicon alloy coated steel product prodn

IT Paints
(adhesion; method for producing hot-formed coated steel product)

IT Heating
(convective, prediffusion annealing; method for producing hot-formed coated steel product)

IT Aluminizing
(hot dip; method for producing hot-formed coated steel product)

IT Hot-dip coating process
(hot-dip aluminizing; method for producing hot-formed coated steel product)

IT Metal forming
(hot; method for producing hot-formed coated steel product)

IT Automobile bodies
Cooling
Cutting
Diffusion coating materials
Immersion coating process
Phase composition
Surface structure
Thickness
(method for producing hot-formed coated steel product)

IT Adhesion, physical
(paint; method for producing hot-formed coated steel product)

IT Induction heating
Radiant heating
(prediffusion annealing; method for producing hot-formed coated steel product)

IT Annealing
(prediffusion; method for producing hot-formed coated steel product)

IT 12004-62-5 12043-58-2 596799-27-8, Aluminum iron silicide (Al₂Fe₂Si)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(method for producing hot-formed coated steel product)

IT 7440-70-2D, Calcium, trace in steel 7704-34-9D, Sulfur, trace in steel 7727-37-9D, Nitrogen, trace in steel 7782-44-7D, Oxygen, trace in steel
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(method for producing hot-formed coated steel product)

IT 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium 0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for producing hot-formed coated steel product)

IT 12597-69-2, Steel, processes 2243499-81-0, Aluminum 96-100, silicon 0.4-4
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for producing hot-formed coated steel product)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L13 ANSWER 27 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2018:1651584 CAPLUS Full-text
DOCUMENT NUMBER: 169:330483
TITLE: Method for producing a steel strip with an aluminum alloy coating layer
INVENTOR(S): Hensen, Guido Cornelis
PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.
SOURCE: PCT Int. Appl., 29pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018158165	A1	20180907	WO 2018-EP54599	20180223
CA 3051515	A1	20180907	CA 2018-3051515	20180223
CN 110352259	A	20191018	CN 2018-80014404	20180223
KR 2019124210	A	20191104	KR 2019-7023412	20180223
EP 3589771	A1	20200108	EP 2018-714699	20180223
BR 112019015695	A2	20200407	BR 2019-112019015695	20180223
JP 2020510756	T	20200409	JP 2019-546864	20180223
US 20200017948	A1	20200116	US 2019-16485655	20190813
IN 201947038244	A	20191004	IN 2019-47038244	20190923

PRIORITY APPLN. INFO.:

EP 2017-158418 A 20170228
EP 2017-158419 A 20170228
WO 2018-EP54599 W 20180223

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a method for producing a steel strip with an aluminum alloy coating layer in a continuous coating process. The invention also relates to an steel strip coated with an aluminum alloy coating layer that can be produced in accordance with the method, the use of such a coated steel strip and the product made by using the coated steel strip.

IT 2243499-83-3D, Aluminum 0-3, boron 0-0.1, carbon 0-0.5, chromium 0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel 0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3, tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca 0-0.05, O 0-0.008
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for producing steel strip with aluminum alloy coating layer)

RN 2243499-83-2 CAPLUS

CN Iron alloy, base, Fe 79-100, Mn 0.4-4, Cr 0-4, Al 0-3, Si 0-3, Cu 0-2, Ni 0-2, Mo 0-1, C 0-0.5, V 0-0.5, W 0-0.5, Nb 0-0.3, Ti 0-0.3, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	79 - 100	7439-89-6
Mn	0.4 - 4	7439-96-5
Cr	0 - 4	7440-47-3
Al	0 - 3	7429-90-5
Si	0 - 3	7440-21-3
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Mo	0 - 1	7439-98-7
C	0 - 0.5	7440-44-0
V	0 - 0.5	7440-62-2
W	0 - 0.5	7440-33-7
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]

IPCR C23C0002-12 [I]; C23C0002-28 [I]; C23C0002-40 [I]

CC 56-7 (Nonferrous Metals and Alloys)

ST aluminum alloy coated steel strip hot dip prodn method

IT Recrystallization
(annealing, before hot dipping; method for producing steel strip with aluminum alloy coating layer)

IT Induction heating
Radiant heating
(annealing; method for producing steel strip with aluminum alloy coating layer)

IT Annealing
(diffusion; method for producing steel strip with aluminum alloy coating layer)

IT Aluminizing
(hot dip, continuous; method for producing steel strip with aluminum alloy coating layer)

IT Hot-dip coating process
(hot-dip aluminizing, continuous; method for producing steel strip with aluminum alloy coating layer)

IT Metal forming
(hot; method for producing steel strip with aluminum alloy coating layer)

IT Automobile bodies
Cooling
Cutting
Diffusion coating materials
Electric heating
Phase composition
Temperature

Thickness
(method for producing steel strip with aluminum alloy
coating layer)

IT Crack propagation
(resistance; method for producing steel strip with aluminum
alloy coating layer)

IT Wetting
(time; method for producing steel strip with aluminum alloy
coating layer)

IT 12004-62-5 12043-58-2 596799-27-8, Aluminum iron silicide (Al₂Fe₂Si)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(method for producing steel strip with aluminum alloy
coating layer)

IT 7440-70-2D, Calcium, trace in steel 7704-34-9D, Sulfur, trace
in steel 7727-37-9D, Nitrogen, trace in steel
7782-44-7D, Oxygen, trace in steel
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(method for producing steel strip with aluminum alloy
coating layer)

IT 12597-69-2, Steel, processes 2243499-81-0, Aluminum 96-100,
silicon 0.4-4 2243499-83-2D, Aluminum 0-3, boron 0-0.1, carbon
0-0.5, chromium 0-4, copper 0-2, manganese 0.4-4, molybdenum 0-1, nickel
0-2, niobium 0-0.3, phosphorus 0-0.1, silicon 0-3, titanium 0-0.3,
tungsten 0-0.5, vanadium 0-0.5, iron bal., S 0-0.05, N 0.001-0.03, Ca
0-0.05, O 0-0.008 2243499-84-3, Aluminum 97, iron 2.3, silicon 0.9
2243499-85-4, Aluminum 96, iron 2.3, silicon 1.9 2243499-86-5, Aluminum
96, iron 2.8, silicon 0.9
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(method for producing steel strip with aluminum alloy
coating layer)

IT 2243499-82-1P, Aluminum 50-55, iron 43-48, silicon 0.4-4
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(method for producing steel strip with aluminum alloy
coating layer)

L13 ANSWER 28 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2018:863056 CAPLUS Full-text
DOCUMENT NUMBER: 168:486049
TITLE: Steel welding part with aluminum or aluminum alloy
plating layer and manufacture method thereof
INVENTOR(S): Pan, Hua; Su, Yongchao; Lei, Ming; Shi, Lei; Jiang,
Haomin
PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China
SOURCE: PCT Int. Appl., 17pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018077067	A1	20180503	WO 2017-CN106516	20171017
CN 106334875	A	20170118	CN 2016-10953787	20161027
MX 2019004121	A	20190606	MX 2019-4121	20171017
KR 2019069471	A	20190619	KR 2019-7013481	20171017
EP 3533558	A1	20190904	EP 2017-864438	20171017
JP 2019535894	T	20191212	JP 2019-520992	20171017
US 20200038998	A1	20200206	US 2019-16339215	20190403
IN 201917015151	A	20190719	IN 2019-17015151	20190415
PRIORITY APPLN. INFO.:			CN 2016-10953787	A 20161027
			WO 2017-CN106516	W 20171017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention discloses a steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof. The steel welding part with aluminum or aluminum alloy plating layer comprises a steel substrate and a plating layer, the plating layer comprises an intermetallic compd. alloy layer in contact with the substrate, and a metal alloy layer thereon; which is characterized in that on at least one of the plated surfaces of the weld blank, the plating layer located

in the area to be welded of the weld blank is completely removed, and the end face of the welding blank part plating layer removed the region to be welded is perpendicular to the surface of the substrate which is parallel to weld seam to form an included angle β , and the included angle $\beta = 0-80^\circ$. A method of manufg. steel welding part with aluminum or aluminum alloy plating layer is characterized in that it includes the steps of: obtaining weld blank by welding according to the requirements of steel welding part with aluminum or aluminum alloy plating layer, welding the area to be welded of the weld blank where the plating layer has been completely removed to form a welded joint; obtaining a part by hot stamping, selecting a cooling rate which is greater than the crit. transformation speed of the matrix martensite quenching, and cooling. This invention ensures tensile strength, elongation rate and corrosion resistance of welding joint after hot stamping.

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

RN 2067242-22-0 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B23K0026-32 [I]; C22C0038-04 [I]
 IPCR B23K0026-32 [I]; C22C0038-04 [I]
 CC 56-9 (Nonferrous Metals and Alloys)
 Section cross-reference(s): 47

ST steel laser welding corrosion strength

IT Corrosion resistance
 Elongation, mechanical
 Laser welding
 Plating process
 Tensile strength
 (steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT Intermetallic compounds
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

IT 1273096-81-3, Aluminum alloy
 RL: TEM (Technical or engineered material use); USES (Uses)
 (steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)

TITLE: Low-carbon steel sheet and plated steel sheet for automobile parts
INVENTOR(S): Sano, Kohichi; Uno, Makoto; Nishiyama, Ryoichi; Yamaguchi, Yuji; Sugiura, Natsuko; Nakata, Masahiro
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: PCT Int. Appl., 54pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2018026015	A1	20180208	WO 2017-JP28478	20170804
TW 1629367	B	20180711	TW 2017-126478	20170804
JP 6358406	B2	20180718	JP 2017-562089	20170804
KR 2019012262	A	20190208	KR 2019-7000430	20170804
KR 2205432	B1	20210120		
MX 2019000051	A	20190401	MX 2019-51	20170804
CN 109563586	A	20190402	CN 2017-80047871	20170804
BR 112019000422	A2	20190430	BR 2019-112019000422	20170804
EP 3495529	A1	20190612	EP 2017-837116	20170804
US 20190233926	A1	20190801	US 2018-16312222	20181220
US 10889879	B2	20210112		
IN 201817049387	A	20190322	IN 2018-17049387	20181227

PRIORITY APPLN. INFO.:

JP 2016-155090	A	20160805
WO 2017-JP28478	W	20170804

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The steel plate has chem. compn. as: aluminum 0.010-0.6, boron 0.0005-0.1, calcium 0.0001-0.05, carbon 0.008-0.15, chromium 0.05-1, copper 0.01-2, iron and impurities balance, magnesium 0.0001-0.05, manganese 0.60-2.5, molybdenum 0.01-1, nickel 0.01-2, niobium 0-0.2, nitrogen 0-0.006, phosphorus 0-0.05, rare earth metal 0.0001-0.05, silicon 0.01-1.7, sulfur 0-0.02, titanium 0-0.2, titanium and niobium 0.015-0.2, zirconium 0.0001-0.05, in mass%, and is provided with a structure represented by, in terms of area ratio, 5-95% ferrite and 5-95% bainite. When a crystal grain is defined as a region which is surrounded by grain boundaries having disorientation of 15°-or higher and for which the equiv. circle diam. is 0.3µm or larger, the proportion of crystal grains having an intragranular disorientation of 5-14°-relative to all of crystal grains is 20-100% in terms of area ratio. The steel plate comprises hard material crystal grains A in which ppts. or clusters with max. diam. of no larger than 8 nm are distributed in no. d. of 1×10¹⁶-1×10¹⁹ particles/cm³, and soft material crystal grains B in which ppts. or clusters with a max. diam. of no larger than 8 nm are distributed in no. d. of no higher than 1×10¹⁵ particles/cm³, and the vol.% of hard material crystal grains A/(vol.% of hard material crystal grains A+vol.% of soft material crystal grains B) is 0.1-0.9. The plated steel plate has galvanized galvanizing plating layer. The steel plate has high strength, good ductility and stretch flangeability, and high yield stress.

IT 2178084-33-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(low-carbon steel sheet and plated steel sheet for automobile parts)

RN 2178084-33-6 CAPLUS

CN Iron alloy, base, Fe 89-99, Mn 0.6-2.5, Cu 0-2, Ni 0-2, Si 0-1.7, Cr 0-1, Mo 0-1, Al 0-0.6, C 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 99	7439-89-6
Mn	0.6 - 2.5	7439-96-5
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Si	0 - 1.7	7440-21-3
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Al	0 - 0.6	7429-90-5
C	0 - 0.2	7440-44-0

Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
B	0	-	0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [N]

IPCR C22C0038-00 [I]; C21D0009-46 [N]; C22C0038-58 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST low carbon steel sheet plating automobile part

IT Automobile parts

Elongation, mechanical

Galvannealing

Grain size

Hot-dip galvanizing

Microstructure

Sheet materials

Tensile strength

Yield strength

(low-carbon steel sheet and plated steel sheet for

automobile parts)

IT 2178084-33-6

RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)

(low-carbon steel sheet and plated steel sheet for

automobile parts)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 30 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:848898 CAPLUS Full-text

TITLE: Contact Fatigue Resistance of Carburized Gears from
Chromium-Nickel Steels

AUTHOR(S): Rudenko, S. P.; Val'ko, A. L.

CORPORATE SOURCE: United Institute for Mechanical Engineering, National
Academy of Sciences of Belarus, Minsk, Belarus

SOURCE: Metal Science and Heat Treatment (2017), 59(1-2),
60-64

CODEN: MHTRAN; ISSN: 0026-0673

DIGITAL OBJECT ID: 10.1007/s11041-017-0103-3

PUBLISHER: Springer

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB The contact fatigue resistance of carburized gears produced from
chromium-nickel steels is studied. The curves of deep contact fatigue of
the material of the gears are plotted in terms of the criterion of
equality of the characteristics of diffusion layers. An expression for
ultimate deep contact fatigue resistance of carburized gears is derived.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				A A Susin, Thermoche	
Anon				A I Petrusevich, Con	
Anon				A N Utkina, Yu Yu Ch	
Anon				B A Balashov, R R Ga	
Anon				B V Gold, E P Obolen	
Anon				E B Vulgakov (ed.),	
Anon				E I Tesker, Advanced	
Anon				N M Ryzhov, "Technol	
Anon				S P Rudenko and A L	
Anon				S P Rudenko, "A stud	
Anon				S P Rudenko, "Comput	
Anon				S P Rudenko, "Fatigu	
Anon				S P Rudenko, A L Val	
Anon				V E Antonyuk, B V Iv	
Anon				Yu S Eliseev, V V Kr	

IT INDEXING IN PROGRESS

IT 37312-00-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(contact fatigue resistance of carburized gears from chromium-nickel
steels)

RN 37312-00-8 CAPLUS
CN Iron alloy, base, Fe 95-97,Ni 0.80-1.10,Cr 0.70-1.10,Mn 0.70-1.00,Si 0.17-0.37,Cu 0-0.30,C 0.16-0.23,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhGnR) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	95	-	97	7439-89-6
Ni	0.80	-	1.10	7440-02-0
Cr	0.70	-	1.10	7440-47-3
Mn	0.70	-	1.00	7439-96-5
Si	0.17	-	0.37	7440-21-3
Cu	0	-	0.30	7440-50-8
C	0.16	-	0.23	7440-44-0
W	0	-	0.20	7440-33-7
Mo	0	-	0.15	7439-98-7
V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
ST chromium nickel ~~steel~~ carburized gear contact fatigue resistance
IT Diffusion
Fatigue resistance
Gears
Microhardness
Microstructure
(contact fatigue resistance of carburized gears from chromium-nickel ~~steels~~)
IT 12681-03-7 12742-08-4 37312-00-8 39411-21-7
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(contact fatigue resistance of carburized gears from chromium-nickel ~~steels~~)

L13 ANSWER 31 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:342418 CAPLUS Full-text
DOCUMENT NUMBER: 166:297159
TITLE: Method for manufacturing ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping
INVENTOR(S): Liu, Xin; Hong, Zhenjun; Tan, Ning; Jin, Xinyan; Liu, Junxiang; Hong, Jiyao
PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 15pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

CN 106466697	A	20170301	CN 2016-10664566	20160812
CN 106466697	B	20200131		

PRIORITY APPLN. INFO.: CN 2016-10664566 20160812

AB The invention discloses a manuf. method of ~~steel~~ plate, which comprises the following steps: blanking the ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by blanking or laser cutting, induction heating, hot stamping in die, and cooling. The temp. and time of heating are detd. by the thickness of ~~steel~~ plate. The components of the ~~steel~~ plate is as follows: C 0.08-0.8%, Si 0.05-1.0%, Mn 0.1-5%, P<0.3%, S<0.1%, Al<0.3%, Ti<0.5%, B 0.0005-0.1%, Cr 0.01-3%, and balance of Fe and inevitable impurities. The ~~coating~~ comprises alloy ~~layer~~, aluminum enriched intermetallic compd. ~~layer~~, intermediate ~~layer~~ and surface ~~layer~~. The components of the alloy ~~layer~~ is Si 0-6%, Fe 75-96%, Al 2-12%; the components of the aluminum enriched intermetallic compd. ~~layer~~ is Si 0-2%, Fe 30-50%, Al 40-60%; the components of the intermediate ~~layer~~ is Si 2-6%, Fe 50-65%, Al 20-35%; and the components of the surface ~~layer~~ is Si 2-6%, Fe 50-65%, Al 20-35%. The product has high strength, complex

shape, good formability, high precision, and small springback, which can be used for automobile parts such as bumper, pillar reinforced plate, floor inside passage, and stiffening beam, etc..

IT 2067242-22-0P, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

RN 2067242-22-0 CAPLUS

CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	89 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Cr	0 - 3	7440-47-3
Si	0 - 1	7440-21-3
C	0.1 - 0.8	7440-44-0
Ti	0 - 0.5	7440-32-6
Al	0 - 0.3	7429-90-5
P	0 - 0.3	7723-14-0
B	0 - 0.1	7440-42-8
S	0 - 0.1	7704-34-9

IPCI B21D0053-88; C22C0038-02; C22C0038-04; C22C0038-06; C22C0038-32; C22C0038-60; C23C0002-12; C23C0002-40

IPCR B21D0053-88 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-32 [I]; C22C0038-60 [I]; C23C0002-12 [I]; C23C0002-40 [I]

CC 55-1 (Ferrous Metals and Alloys)

ST hot stamping aluminum alloy ~~steel~~ plate ~~coating~~ manuf

IT ~~Coating materials~~
 Cooling
 Induction heating
 Industrial manufacturing
 Laser cutting
 Quenching (cooling)
 Transmissions (mechanical)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

IT Metalworking
 (stamping, hot; method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

IT 2067242-22-0P, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal. 2087430-40-6P, Aluminum 2-12, iron 75-96, silicon 0-6 2087430-41-7P, Aluminum 40-60, iron 30-50, silicon 0-2 2087430-42-8P, Aluminum 20-35, iron 50-65, silicon 2-6
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

IT 2087430-39-3, Iron 0-4, silicon 5-11, Aluminum bal.
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

IT 7429-90-5, Aluminum, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manufg. ~~steel~~ plate with aluminum or aluminum alloy ~~coating~~ by hot stamping)

L13 ANSWER 32 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2017:227313 CAPLUS Full-text

DOCUMENT NUMBER: 166:249360

TITLE: Hot rolled ~~steel~~ sheet and its manufacture for

ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal
 IPR2024-01377
 Page 1321 of 1430

INVENTOR(S): automobile parts
Sakakibara, Chikami; Sugiura, Natsuko; Tanaka,
Yasuaki; Tanei, Hiroshi; Fujii, Takashi; Yokoyama,
Takashi
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2017031454	A	20170209	JP 2015-150831	20150730
JP 6620446	B2	20191218		
WO 2017022025	A1	20170209	WO 2015-JP71845	20150731
PRIORITY APPLN. INFO.:			JP 2015-150831	T0 20150730

AB To provide hot-rolled steel plate excellent in pickling property and without an increase in equipment cost, generation of internal oxide layer of a high strength hot rolled steel sheet contg. relatively large amts. of Si and Mn is suppressed, and method for manufg. thereof. Hot-rolled steel plate comprises C: 0.04-0.6%, Si: 0.01-3%, Mn: 0.1-5%, P: 0.04% or less, S: 0.05% or less, Al: 0.001-2%, N: 0.01% or less, O: 0.01% or less, one or more of Sb, Sn and Te: total amt. of 0.01-0.3% and remainder of Fe and unavoidable impurities, and has thickness of the internal oxide layer of 5 µm or less, a concd. layer of Sb, Sn and Te as an upper layer of the internal oxide layer, and has mech. properties with a tensile strength of 590 MPa or more.

IT 2079034-18-5P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high strength hot rolled steel sheet and its manuf. for automobile parts)

RN 2079034-18-5 CAPLUS

CN Iron alloy, base, Fe 80-100, Mn 0.1-5, Si 0-3, Al 0-2, Cr 0-2, Cu 0-2, Ni 0-2, Mo 0-1, C 0-0.6, Nb 0-0.3, Sb 0-0.3, Sn 0-0.3, Te 0-0.3, Ti 0-0.3, V 0-0.3, B 0-0.1
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Mn	0.1 - 5	7439-96-5
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Cr	0 - 2	7440-47-3
Cu	0 - 2	7440-50-8
Ni	0 - 2	7440-02-0
Mo	0 - 1	7439-98-7
C	0 - 0.6	7440-44-0
Nb	0 - 0.3	7440-03-1
Sb	0 - 0.3	7440-36-0
Sn	0 - 0.3	7440-31-5
Te	0 - 0.3	13494-80-9
Ti	0 - 0.3	7440-32-6
V	0 - 0.3	7440-62-2
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C21D0009-46 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-60 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST hot rolled steel sheet manuf automobile part

IT Automobile parts
Casting of metals
Hot rolling
Melting
Microstructure
Pickling
Sheet materials
Tensile strength

(high strength hot rolled steel sheet and its manuf. for

automobile parts)
IT 2079034-18-5P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(high strength hot rolled steel sheet and its manuf. for automobile parts)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 33 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2017:100416 CAPLUS Full-text
DOCUMENT NUMBER: 166:179501
TITLE: Steel welding part with aluminum or aluminum alloy plating layer and manufacture method thereof
INVENTOR(S): Pan, Hua; Su, Yongchao; Lei, Ming; Shi, Lei; Jiang, Haomin
PATENT ASSIGNEE(S): Baoshan Iron & Steel Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 8pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 106334875	A	20170118	CN 2016-10953787	20161027
WO 2018077067	A1	20180503	WO 2017-CN106516	20171017
MX 2019004121	A	20190606	MX 2019-4121	20171017
KR 2019069471	A	20190619	KR 2019-7013481	20171017
EP 3533558	A1	20190904	EP 2017-864438	20171017
JP 2019535894	T	20191212	JP 2019-520992	20171017
US 20200038998	A1	20200206	US 2019-16339215	20190403
IN 201917015151	A	20190719	IN 2019-17015151	20190415
PRIORITY APPLN. INFO.:			CN 2016-10953787	A 20161027
			WO 2017-CN106516	W 20171017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention discloses a steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof. The steel welding part with aluminum or aluminum alloy plating layer comprises a steel substrate and a plating layer, the plating layer comprises an intermetallic compd. alloy layer in contact with the substrate, and a metal alloy layer thereon; which is characterized in that on at least one of the plated surfaces of the weld blank, the plating layer located in the area to be welded of the weld blank is completely removed, and the end face of the welding blank part plating layer removed the region to be welded is perpendicular to the surface of the substrate which is parallel to weld seam to form an included angle β , and the included angle $\beta = 0-80^\circ$. A method of manufg. steel welding part with aluminum or aluminum alloy plating layer is characterized in that it includes the steps of: obtaining weld blank by welding according to the requirements of steel welding part with aluminum or aluminum alloy plating layer, welding the area to be welded of the weld blank where the plating layer has been completely removed to form a welded joint; obtaining a part by hot stamping, selecting a cooling rate which is greater than the crit. transformation speed of the matrix martensite quenching, and cooling. This invention ensures tensile strength, elongation rate and corrosion resistance of welding joint after hot stamping.

IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8, chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur 0-0.1, titanium 0-0.5, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(steel welding part with aluminum or aluminum alloy plating layer and manuf. method thereof)
RN 2067242-22-0 CAPLUS
CN Iron alloy, base, Fe 89-100, Mn 0.1-5, Cr 0-3, Si 0-1, C 0.1-0.8, Ti 0-0.5, Al 0-0.3, P 0-0.3, B 0-0.1, S 0-0.1 (CA INDEX NAME)

Component Component Component
Percent Registry Number

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=====+=====+=====
Fe      89   - 100      7439-89-6
Mn      0.1 -   5      7439-96-5
Cr       0   -   3      7440-47-3
Si       0   -   1      7440-21-3
C       0.1 - 0.8      7440-44-0
Ti       0   - 0.5      7440-32-6
Al       0   - 0.3      7429-90-5
P        0   - 0.3      7723-14-0
B        0   - 0.1      7440-42-8
S        0   - 0.1      7704-34-9

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IPCI B23K0026-32; C22C0038-04; C22C0038-02; C22C0038-06; C22C0038-14;
C22C0038-18; C23C0002-12; B23K0103-20
IPCR B23K0026-32 [I]; B23K0103-20 [N]; C22C0038-02 [I]; C22C0038-04 [I];
C22C0038-06 [I]; C22C0038-14 [I]; C22C0038-18 [I]; C23C0002-12 [I]
CC 56-9 (Nonferrous Metals and Alloys)
Section cross-reference(s): 47
ST steel welding part aluminum alloy plating layer
IT Metalworking
(stamping, hot; steel welding part with aluminum or aluminum
alloy plating layer and manuf. method thereof)
IT Corrosion-resistant materials
Industrial manufacturing
Joints, mechanical
Laser ablation
Laser welding
Plating process
Welding apparatus
Welds
(steel welding part with aluminum or aluminum alloy plating
layer and manuf. method thereof)
IT 12003-42-8 12004-62-5 12043-58-2
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(steel welding part with aluminum or aluminum alloy plating
layer and manuf. method thereof)
IT 1273096-81-3P, Aluminum alloy
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PREP (Preparation);
PROC (Process); USES (Uses)
(steel welding part with aluminum or aluminum alloy plating
layer and manuf. method thereof)
IT 2067242-22-0, Aluminum 0-0.3, boron 0-0.1, carbon 0.1-0.8,
chromium 0-3, manganese 0.1-5, phosphorus 0-0.3, silicon 0-1, sulfur
0-0.1, titanium 0-0.5, iron bal.
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(steel welding part with aluminum or aluminum alloy plating
layer and manuf. method thereof)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
(2 CITINGS)

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L13 ANSWER 34 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2016:2049760 CAPLUS Full-text
DOCUMENT NUMBER: 167:333389
TITLE: Method for hot forming a coated metal part and
formed part
INVENTOR(S): Verloop, Willem Cornelis; Van Genderen, Marc Jacco;
Van Tol, Ronald Theodoor; Hensen, Guido Cornelis;
Loiseaux, Jenny
PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.
SOURCE: U.S., No pp. given
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 9127329	B2	20150908	US 2013-13818041	20130220
US 20130153094	A1	20130620		

WO 2012028224 A1 20120308 WO 2011-EP3601 20110719
PRIORITY APPLN. INFO.: EP 2010-9041 A 20100831
WO 2011-EP3601 W 20110719

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A method for manufg. a coated part having very high mech. properties using hot forming techniques. The method includes: -providing an annealed steel strip or blank or pre-shaped part that was coated with a metal or metal alloy before the annealing -if a strip is provided, cutting a blank from the strip before or after the annealing -optionally forming a pre-shaped part from the blank -heating the blank or preshaped part to a temp. of 500° C. at an av. heating rate of 16° C./s or more -further heating the blank or pre-shaped part to a temp. between 700 and 1000° C. -hot forming the blank or preshaped part into a hot formed part -hardening the hot formed part. A method for manufg. a coated steel strip, blank or pre-shaped part, and a coated steel strip, blank or part and a hot formed part.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	2009			DE 102008022400 A1	CAPLUS
Anon	2009			WO 2009021743 A1	CAPLUS
Anon	2009			WO 2009096351 A1	CAPLUS
Anon	2010			WO 2010005121 A1	CAPLUS
Anon	2010			WO 2010069588 A1	CAPLUS
Anon	2010			WO 2010085983 A1	CAPLUS
Anon	2010			EP 2177641 A1	CAPLUS
Anon	2002			"Glossary of Metallu	
Anon	2011			International Search	
Brandstatter	2011			US 20110045316 A1	CAPLUS
Hensen	2011			US 20110236719 A1	CAPLUS
Maki	2011			US 20110174418 A1	CAPLUS
Mehler	1962			US 3056694 A	CAPLUS
Oh	2008			US 20080286603 A1	CAPLUS
Thirion	2012			US 20120085467 A1	CAPLUS
Toki	2011			US 20110048585 A1	CAPLUS
Vlot	2010			US 20100026048 A1	CAPLUS

IT 1360605-36-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for manuf. coated steel parts by hot forming)

RN 1360605-36-2 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
V	0 - 0.1	7440-62-2

IPCI C21D0008-02 [I]; C21D0009-46 [I]; C23C0002-06 [I]; C23C0002-40 [I];
B32B0015-01 [I]; C21D0001-673 [I]; C21D0008-04 [I]; C21D0009-48 [I];
C22C0038-02 [I]; C22C0038-04 [I]; C23C0010-28 [I]; C23C0010-60 [I];
C21D0008-02 [I]; B32B0015-01 [I]

IPCR C21D0008-02 [I]; B32B0015-01 [I]; C21D0001-673 [I]; C21D0008-04 [I];
C21D0009-46 [I]; C21D0009-48 [I]; C22C0038-02 [I]; C22C0038-04 [I];
C23C0002-06 [I]; C23C0002-40 [I]; C23C0010-28 [I]; C23C0010-60 [I]

NCL 001/001.000; 148/533.000; 148/330.000

CC 55-3 (Ferrous Metals and Alloys)

ST steel strip coating hot deformation

IT Plastic deformation

(hot; method for manuf. coated steel parts by hot forming)

IT 1360605-37-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; method for manuf. coated steel parts by hot forming)

IT 1360605-36-2
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manuf. coated steel parts by hot forming)

L13 ANSWER 35 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1997298 CAPLUS Full-text

DOCUMENT NUMBER: 167:180612

TITLE: Coated steel strips, methods of making the same, methods of using the same, stamping blanks prepared from the same, stamped products prepared from the same, and articles of manufacture which contain such a stamped product

INVENTOR(S): Drillet, Pascal; Spehner, Dominique; Kefferstein, Ronald

PATENT ASSIGNEE(S): Arcelormittal France, Fr.

SOURCE: U.S. Pat. Appl. Publ., No pp. given
 CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20110165436	A1	20110707	US 2011-447777	20110318
WO 2008053273	A1	20080508	WO 2006-IB4019	20061030
EP 3290199	A1	20180307	EP 2017-192410	20061030
EP 3290199	B1	20190821		
EP 3290200	A1	20180307	EP 2017-192418	20061030
EP 3587104	A1	20200101	EP 2019-185736	20061030
EP 3587105	A1	20200101	EP 2019-185743	20061030
US 20130029172	A1	20130131	US 2012-13621015	20120915
US 9708683	B2	20170718		
US 20170260603	A1	20170914	US 2017-15606770	20170526
US 10550447	B2	20200204		
US 20190271055	A1	20190905	US 2019-16413774	20190516
US 10590507	B2	20200317		
US 20190271056	A1	20190905	US 2019-16413799	20190516
US 20190271057	A1	20190905	US 2019-16413825	20190516
US 20190271058	A1	20190905	US 2019-16414022	20190516
US 10597747	B2	20200324		
US 20190276912	A1	20190912	US 2019-16413729	20190516
US 10577674	B2	20200303		

PRIORITY APPLN. INFO.:

WO 2006-IB4019	W	20061030
EP 2006-842403	A3	20061030
EP 2017-192410	A3	20061030
US 2011-447777	A3	20110318
US 2012-13621015	A1	20120915
US 2017-15606770	A1	20170526

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Coated steel having a well defined and uniform thickness is useful and advantageous for prepg. products by hot stamping. Products prepd. by hot stamping such a steel are particularly advantageous when subjected to a subsequent spot welding step.

IT 1022915-01-0
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (aluminum coated steel strips stamping blanks and articles of manuf. which contain such a stamped product)

RN 1022915-01-0 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component Component Component

	Percent	Registry Number
=====+	=====+	=====
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

INCL 428653000; 072342100; 072047000
 IPCI B32B0015-01 [I]; B21D0022-00 [I]; C21D0009-46 [I]
 IPCR B32B0015-01 [I]; B21D0022-00 [I]; C21D0009-46 [I]
 NCL 428/653.000; 072/047.000; 072/342.100
 CC 55-11 (Ferrous Metals and Alloys)
 ST aluminum coated steel strip stamping article spot welding
 IT Metalworking
 (stamping; aluminum coated steel strips stamping
 blanks and articles of manuf. which contain such a stamped product)
 IT 7429-90-5, Aluminum, uses 952598-91-3, Aluminum 87-90, iron 2-4, silicon
 8-11
 RL: NUU (Other use, unclassified); USES (Uses)
 (aluminum coated steel strips stamping blanks and
 articles of manuf. which contain such a stamped product)
 IT 1022915-01-0
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (aluminum coated steel strips stamping blanks and
 articles of manuf. which contain such a stamped product)

L13 ANSWER 36 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2016:1770673 CAPLUS Full-text
 DOCUMENT NUMBER: 165:549448
 TITLE: Production of hot or cold strips from steel having
 high copper content
 INVENTOR(S): Redenius, Alexander; Evertz, Thomas; Palzer, Peter
 PATENT ASSIGNEE(S): Salzgitter Flachstahl GmbH, Germany
 SOURCE: PCT Int. Appl., 23pp.; Chemical Indexing Equivalent to
 165:549447 (DE)
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016174020	A1	20161103	WO 2016-EP59266	20160426
DE 102015106780	A1	20161103	DE 2015-102015106780	20150430
PRIORITY APPLN. INFO.:			DE 2015-102015106780 A	20150430

AB A hot or cold strip of steel with high copper content, is manufd. by:
 melting a steel melt contg. (in wt.%) 0-0.4% C, 0-3% Mn, 0-2% Al, 0-2%
 Si, more than 0.8% Cu, 0-0.2% P, 0-0.05% S, and 0-0.3% N, with optional
 addn. of Sn, Ni, Cr, V, Nb, Ti, Mo, W, B, Co, Sb and/or Zr, the remainder
 being iron and unavoidable impurities; casting the melt under an atm.
 having an oxygen content <10 vol.%, by a near-net-shape casting method, in
 particular horizontal strip casting or vertical casting according to the
 two-roll method, into a pre-strip having a thickness in of 1-30 mm;
 cooling the cast pre-strip at a cooling rate ≥100 K/s at the
 actively cooled strip surface until forming a rigid boundary layer.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
FANG YUAN	2014			US 20140366602 A1	
GUELTON NICOLAS PATRICE	2004			EP 1466024 A1	CAPLUS
IKI HIROSHI	2000			JP 2000045045 A	CAPLUS
IUNG THIERRY	2001			EP 1072689 A1	CAPLUS
MARUYAMA NAOKI	2005			JP 2005036271 A	CAPLUS
MIZOGUCHI TOSHIAKI NIPP	1995			EP 0641867 A1	CAPLUS

UENISHI AKIHIRO | 2000 | | | EP 0969112 A1 | CAPLUS
YAMAKAWA TSUNAHIRO | 1992 | | | US 5098489 A | CAPLUS
IT 2031158-69-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from steel having high copper content)
RN 2031158-69-5 CAPLUS
CN Iron alloy, base, Fe 68-99, Cu 0.8-5, Cr 0-4, Co 0-3, Mn 0-3, Mo 0-3, W 0-3, Al 0-2, Ni 0-2, Si 0-2, Nb 0-0.9, Ti 0-0.9, V 0-0.9, Sn 0-0.5, Zr 0-0.5, C 0-0.4, B 0-0.3, N 0-0.3, P 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	68 - 99	7439-89-6
Cu	0.8 - 5	7440-50-8
Cr	0 - 4	7440-47-3
Co	0 - 3	7440-48-4
Mn	0 - 3	7439-96-5
Mo	0 - 3	7439-98-7
W	0 - 3	7440-33-7
Al	0 - 2	7429-90-5
Ni	0 - 2	7440-02-0
Si	0 - 2	7440-21-3
Nb	0 - 0.9	7440-03-1
Ti	0 - 0.9	7440-32-6
V	0 - 0.9	7440-62-2
Sn	0 - 0.5	7440-31-5
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0
B	0 - 0.3	7440-42-8
N	0 - 0.3	17778-88-0
P	0 - 0.2	7723-14-0

IPCI C22C0038-00 [I]; B22D0011-00 [I]; B22D0011-06 [I]; B22D0011-106 [I]; B22D0011-124 [I]; B22D0011-14 [I]; B22D0011-22 [I]; B22D0015-00 [I]; B22D0037-00 [I]; C21D0006-00 [I]; C21D0008-02 [I]; C21D0001-26 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-16 [I]; B22D0011-112 [I]; C21D0006-02 [I]
IPCR C22C0038-00 [I]; B22D0011-00 [I]; B22D0011-06 [I]; B22D0011-106 [I]; B22D0011-112 [I]; B22D0011-124 [I]; B22D0011-14 [I]; B22D0011-22 [I]; B22D0015-00 [I]; B22D0037-00 [I]; C21D0001-26 [I]; C21D0006-00 [I]; C21D0006-02 [I]; C21D0008-02 [I]; C22C0038-02 [I]; C22C0038-04 [I]; C22C0038-06 [I]; C22C0038-16 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST hot cold strip steel copper casting cooling
IT Annealing
Casting of metals
Cooling
Hot rolling
(prodn. of hot or cold strips from steel having high copper content)
IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(casting atm.; prodn. of hot or cold strips from steel having high copper content)
IT 2031158-68-4P 2031158-69-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from steel having high copper content)

L13 ANSWER 37 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1770568 CAPLUS Full-text

DOCUMENT NUMBER: 165:549447

TITLE: Production of hot or cold strips from steel having high copper content

INVENTOR(S): Redenius, Alexander; Evertz, Thomas; Palzer, Peter ArcelorMittal Ex. 2001 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1328 of 1430

PATENT ASSIGNEE(S): Salzgitter Flachstahl GmbH, Germany
SOURCE: Ger. Offen., 9pp.; Chemical Indexing Equivalent to
165:549448 (WO)
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102015106780	A1	20161103	DE 2015-102015106780	20150430
WO 2016174020	A1	20161103	WO 2016-EP59266	20160426
PRIORITY APPLN. INFO.:			DE 2015-102015106780 A	20150430

AB A hot or cold strip of ~~steel~~ with high copper content, is manufd. by:
melting a ~~steel~~ melt contg. (in wt.%) 0-0.4% C, 0-3% Mn, 0-2% Al, 0-2%
Si, more than 0.8% Cu, 0-0.2% P, 0-0.05% S, and 0-0.3% N, with optional
addn. of Sn, Ni, Cr, V, Nb, Ti, Mo, W, B, Co, Sb and/or Zr, the remainder
being iron and unavoidable impurities; casting the melt under an atm.
having an oxygen content <10 vol.%, by a near-net-shape casting method, in
particular horizontal strip casting or vertical casting according to the
two-roll method, into a pre-strip having a thickness in of 1-30 mm;
cooling the cast pre-strip at a cooling rate ≥ 100 K/s at the
actively cooled strip surface until forming a rigid boundary layer.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				DE 112013001434 T5	CAPLUS
Anon				WO 2015003755 A1	CAPLUS
Anon				EP 2546368 A1	CAPLUS
Anon				DE 60306365 T2	
Anon	2013			M Bausch et al:Ultra	

IT 2031158-69-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from ~~steel~~ having high
copper content)

RN 2031158-69-5 CAPLUS

CN Iron alloy, base, Fe 68-99, Cu 0.8-5, Cr 0-4, Co 0-3, Mn 0-3, Mo 0-3, W 0-3, Al
0-2, Ni 0-2, Si 0-2, Nb 0-0.9, Ti 0-0.9, V 0-0.9, Sn 0-0.5, Zr 0-0.5, C 0-0.4, B
0-0.3, N 0-0.3, P 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	68 - 99	7439-89-6
Cu	0.8 - 5	7440-50-8
Cr	0 - 4	7440-47-3
Co	0 - 3	7440-48-4
Mn	0 - 3	7439-96-5
Mo	0 - 3	7439-98-7
W	0 - 3	7440-33-7
Al	0 - 2	7429-90-5
Ni	0 - 2	7440-02-0
Si	0 - 2	7440-21-3
Nb	0 - 0.9	7440-03-1
Ti	0 - 0.9	7440-32-6
V	0 - 0.9	7440-62-2
Sn	0 - 0.5	7440-31-5
Zr	0 - 0.5	7440-67-7
C	0 - 0.4	7440-44-0
B	0 - 0.3	7440-42-8
N	0 - 0.3	17778-88-0
P	0 - 0.2	7723-14-0

IPCI C22C0038-04 [I]; C22C0038-16 [I]; C21D0008-00 [I]; B22D0011-06 [I];

B22D0011-116 [I]; B22D0011-12 [I]; C22C0111-00 [I]

IPCR C22C0038-04 [I]; B22D0011-06 [I]; B22D0011-116 [I]; B22D0011-12 [I];

C21D0008-00 [I]; C22C0038-16 [I]; C22C0111-00 [N]

CC 55-3 (Ferrous Metals and Alloys)

ST hot cold strip ~~steel~~ copper casting cooling

IT Annealing

Casting of metals
Cooling
Hot rolling
(prodn. of hot or cold strips from ~~steel~~ having high copper content)
IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(casting atm.; prodn. of hot or cold strips from ~~steel~~ having high copper content)
IT 2031158-68-4P ~~2031158-69-5P~~
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(strips; prodn. of hot or cold strips from ~~steel~~ having high copper content)

L13 ANSWER 38 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2016:1617614 CAPLUS Full-text

DOCUMENT NUMBER: 165:466273

TITLE: Composition and manufacture of carbon ~~steel~~ sheet suitable for hot stamping, and hot stamping molded parts

INVENTOR(S): Azuma, Masafumi; Suwa, Yoshihiro; Kondo, Yusuke; Sato, Koichi

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: PCT Int. Appl., 49pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2016158961	A1	20161006	WO 2016-JP60145	20160329
CA 2979978	A1	20161006	CA 2016-2979978	20160329
KR 2017122823	A	20171106	KR 2017-7027982	20160329
KR 2000863	B1	20190716		
CN 107427889	A	20171201	CN 2016-80017529	20160329
CN 107427889	B	20191025		
MX 2017012377	A	20171214	MX 2017-12377	20160329
EP 3278895	A1	20180207	EP 2016-772842	20160329
EP 3278895	B1	20200311		
BR 112017020165	A2	20180605	BR 2017-112017020165	20160329
RU 2683397	C1	20190328	RU 2017-135379	20160329
JP 6515356	B2	20190522	JP 2017-510030	20160329
ES 2781465	T3	20200902	ES 2016-772842	20160329
TW I597370	B	20170901	TW 2016-110064	20160330
US 20180044754	A1	20180215	US 2017-15559731	20170919
IN 201717033300	A	20171201	IN 2017-17033300	20170920

PRIORITY APPLN. INFO.: JP 2015-72280 A 20150331
WO 2016-JP60145 W 20160329

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A ~~steel~~ sheet for hot stamping contains, in percentage by wt., C: 0.100%-0.600%, Si: 0.50%-3.00%, Mn: 1.20%-4.00%, Ti: 0.005%-0.100%, B: 0.0005%-0.100%, P: 0.100% or less, S: 0.0001%-0.0100%, Al: 0.005%-1.000%, and N: 0.100% or less, with the remainder comprising Fe and impurities. The ~~steel~~ sheet surface roughness is such that Rz > 2.5 μ m, and the surface is ~~coated~~ with 50 mg/m2-1,500 mg/m2 of oil ~~coated~~ thereon.

RETABLe

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1997			JP 976004 A	
HAYASHI KUNIO	2012			WO 2012053636 A1	CAPLUS
KAWASAKI KAORU	2011			WO 2011158818 A1	CAPLUS
KOJIMA TAKESHI	2014			JP 2014159624 A	CAPLUS
KUSUMI KAZUHISA	2008			JP 2008240046 A	CAPLUS
SETO KAZUHIRO	2010			JP 2010174302 A	CAPLUS

IT 2015959-64-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or

engineered material use); PREP (Preparation); USES (Uses)
(compn. and manuf. of carbon ~~steel~~ sheet suitable for hot
stamping, and hot stamping molded parts)

RN 2015959-64-3 CAPLUS
CN Iron alloy, base, Fe 83-98,Mn 1.2-4,Si 0.5-3,Cr 0-2,Cu 0-2,Mo 0-2,Ni
0-2,Al 0-1,C 0.1-0.6,B 0-0.1,Nb 0-0.1,P 0-0.1,Ti 0-0.1,V 0-0.1,W 0-0.1
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	83 - 98	7439-89-6
Mn	1.2 - 4	7439-96-5
Si	0.5 - 3	7440-21-3
Cr	0 - 2	7440-47-3
Cu	0 - 2	7440-50-8
Mo	0 - 2	7439-98-7
Ni	0 - 2	7440-02-0
Al	0 - 1	7429-90-5
C	0.1 - 0.6	7440-44-0
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
Ti	0 - 0.1	7440-32-6
V	0 - 0.1	7440-62-2
W	0 - 0.1	7440-33-7

IPCI B21D0022-20 [I]; B21D0024-00 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-14 [I]; C22C0038-58 [I]; C23F0011-00 [I]; C23G0001-08 [I];
IPCR B21D0022-20 [I]; B21D0024-00 [I]; C21D0009-46 [I]; C22C0038-00 [I];
C22C0038-14 [I]; C22C0038-58 [I]; C23F0011-00 [I]; C23G0001-08 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST carbon ~~steel~~ sheet manuf hot stamping molded part

IT Adhesion, physical

Annealing

Casting of metals

Cold rolling

Hot rolling

Lubrication

Pickling

Scale (deposits)

Sheet materials

Surface roughness

Tensile strength

(compn. and manuf. of carbon ~~steel~~ sheet suitable for hot
stamping, and hot stamping molded parts)

IT Metalworking

(stamping, hot; compn. and manuf. of carbon ~~steel~~ sheet
suitable for hot stamping, and hot stamping molded parts)

IT 2015959-64-3P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(compn. and manuf. of carbon ~~steel~~ sheet suitable for hot
stamping, and hot stamping molded parts)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 39 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2015:1942164 CAPLUS Full-text

DOCUMENT NUMBER: 164:40753

TITLE: ~~Steel~~ sheet provided with a sacrificial cathodically
protected ~~coating~~ comprising lanthanum

INVENTOR(S): Allely, Christian; Petitjean, Jacques

PATENT ASSIGNEE(S): ArcelorMittal Investigacion y Desarrollo, S.L., Spain

SOURCE: PCT Int. Appl., 20pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1331 of 1430

WO 2015181581	A1	20151203	WO 2014-IB61788	20140528
CA 2950476	A1	20151203	CA 2015-2950476	20150528
WO 2015181318	A1	20151203	WO 2015-EP61891	20150528
KR 2017010773	A	20170201	KR 2016-7032934	20150528
CN 106460138	A	20170222	CN 2015-80027730	20150528
EP 3149217	A1	20170405	EP 2015-724718	20150528
EP 3149217	B1	20180711		
JP 2017524806	T	20170831	JP 2016-569819	20150528
JP 6762879	B2	20200930		
ES 2689039	T3	20181108	ES 2015-724718	20150528
RU 2689979	C2	20190530	RU 2016-146657	20150528
ZA 2016007435	A	20171220	ZA 2016-7435	20161027
IN 201617039713	A	20170310	IN 2016-17039713	20161121
IN 343260	B	20200804		
MX 2016015550	A	20170425	MX 2016-15550	20161125
US 20170198374	A1	20170713	US 2016-15314457	20161128
US 10676804	B2	20200609		

PRIORITY APPLN. INFO.:

WO 2014-IB61788	A	20140528
WO 2015-EP61891	W	20150528

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a ~~steel~~ sheet provided with a sacrificial cathodically protected ~~coating~~ comprising between 1 and 40 % by wt. zinc, between 0.01 and 0.4 % by wt. lanthanum, and optionally up to 10 % by wt. magnesium, optionally up to 15 % by wt. silicon, and optionally up to 0.3 % by wt., in cumulative amts., of addnl. components, the remainder consisting of aluminum and unavoidable impurities or residual elements. The invention also relates to a method of producing parts by hot or cold swaging and the parts which can be obtained in this way.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
LIXIN FENG	2010			CN 101736217 A	CAPLUS
MORIMOTO YASUhide	2009			JP 2009120942 A	CAPLUS
NOSE KOICHI	2008			EP 1997927 A1	CAPLUS
ZHAO YUNJIE	2013			CN 103045980 A	CAPLUS

IT 1173986-65-6

RL: NUU (Other use, unclassified); USES (Uses)
(~~steel~~ sheet provided with sacrificial cathodically protected
~~coating~~ comprising lanthanum)

RN 1173986-65-6 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Cu	0 - 0.1	7440-50-8
Ni	0 - 0.1	7440-02-0
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C22C0021-10 [I]

IPCR C23C0002-12 [I]; C22C0021-10 [I]

CC 56-3 (Nonferrous Metals and Alloys)

ST ~~steel~~ sheet sacrificial cathodically protected ~~coating~~ lanthanum swaging

IT Anticorrosive ~~coating~~ materials

Coating process

Swaging

(~~steel~~ sheet provided with sacrificial cathodically protected
~~coating~~ comprising lanthanum)

IT 7439-91-0, Lanthanum, uses

RL: MOA (Modifier or additive use); USES (Uses)

(~~steel~~ sheet provided with sacrificial cathodically protected

IT coating comprising lanthanum)
12597-69-2, Steel, uses 1173986-65-6
RL: NUU (Other use, unclassified); USES (Uses)
(steel sheet provided with sacrificial cathodically protected
coating comprising lanthanum)
IT 1832643-11-4
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(steel sheet provided with sacrificial cathodically protected
coating comprising lanthanum)

L13 ANSWER 40 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2015:1942163 CAPLUS Full-text
DOCUMENT NUMBER: 164:40752
TITLE: Steel sheet provided with a sacrificial cathodically
protected coating comprising lanthanum
INVENTOR(S): Allely, Christian; Petitjean, Jacques
PATENT ASSIGNEE(S): ArcelorMittal, Luxembourg
SOURCE: PCT Int. Appl., 21pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2015181318	A1	20151203	WO 2015-EP61891	20150528
WO 2015181581	A1	20151203	WO 2014-IB61788	20140528
CA 2950476	A1	20151203	CA 2015-2950476	20150528
KR 2017010773	A	20170201	KR 2016-7032934	20150528
CN 106460138	A	20170222	CN 2015-80027730	20150528
EP 3149217	A1	20170405	EP 2015-724718	20150528
EP 3149217	B1	20180711		
JP 2017524806	T	20170831	JP 2016-569819	20150528
JP 6762879	B2	20200930		
ES 2689039	T3	20181108	ES 2015-724718	20150528
RU 2689979	C2	20190530	RU 2016-146657	20150528
IN 201617039713	A	20170310	IN 2016-17039713	20161121
IN 343260	B	20200804		
MX 2016015550	A	20170425	MX 2016-15550	20161125
US 20170198374	A1	20170713	US 2016-15314457	20161128
US 10676804	B2	20200609		

PRIORITY APPLN. INFO.: WO 2014-IB61788 A 20140528
WO 2015-EP61891 W 20150528

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a steel sheet provided with a sacrificial
cathodically protected coating comprising between 1 and 40 % by wt.
zinc, between 0.01 and 0.4 % by wt. lanthanum, and optionally up to 10 %
by wt. magnesium, optionally up to 15 % by wt. silicon, and optionally up
to 0.3 % by wt., in cumulative amts., of addnl. components, the remainder
consisting of aluminum and unavoidable impurities or residual elements.
The invention also relates to a method of producing parts by hot or cold
swaging and the parts which can be obtained in this way.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
LIXIN FENG	2010			CN 101736217 A	CAPLUS
MORIMOTO YASUhide	2009			JP 2009120942 A	CAPLUS
NOSE KOICHI	2008			EP 1997927 A1	CAPLUS
ZHAO YUNJIE	2013			CN 103045980 A	CAPLUS

IT 1173986-65-6
RL: NUU (Other use, unclassified); USES (Uses)
(steel sheet provided with sacrificial cathodically protected
coating comprising lanthanum)
RN 1173986-65-6 CAPLUS
CN Iron alloy, base, Fe 94-99,Mn 0.5-3,Cr 0-1,C 0.2-0.5,Si 0.1-0.5,Ti
0-0.2,Al 0-0.1,B 0-0.1,Cu 0-0.1,Ni 0-0.1,P 0-0.1 (CA INDEX NAME)

Component Component
Percent Registry Number

```

=====+=====+=====
Fe      94    -   99      7439-89-6
Mn      0.5  -    3      7439-96-5
Cr       0    -    1      7440-47-3
C       0.2  -   0.5      7440-44-0
Si      0.1  -   0.5      7440-21-3
Ti       0    -   0.2      7440-32-6
Al       0    -   0.1      7429-90-5
B        0    -   0.1      7440-42-8
Cu       0    -   0.1      7440-50-8
Ni       0    -   0.1      7440-02-0
P        0    -   0.1      7723-14-0

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IPCI C23C0002-12 [I]; C22C0021-10 [I]
IPCR C23C0002-12 [I]; C22C0021-10 [I]
CC   56-3 (Nonferrous Metals and Alloys)
ST   steel sheet sacrificial cathodically protected coating swaging
IT   Anticorrosive coating materials
      Coating process
      (steel sheet provided with sacrificial cathodically protected
      coating comprising lanthanum)
IT   12597-69-2, Steel, uses 1173986-65-6
      RL: NUU (Other use, unclassified); USES (Uses)
      (steel sheet provided with sacrificial cathodically protected
      coating comprising lanthanum)
IT   1832625-87-2
      RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
      (Technical or engineered material use); PROC (Process); USES (Uses)
      (steel sheet provided with sacrificial cathodically protected
      coating comprising lanthanum)

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L13 ANSWER 41 OF 103  CAPLUS  COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER:      2015:512917  CAPLUS Full-text
DOCUMENT NUMBER:       162:428426
TITLE:                 Metal powder for powder-based production processes and
                        method for production of a metallic component from
                        metal powder
INVENTOR(S):           Fechte-Heinen, Rainer; Mayer, Stefan; Offergeld,
                        Andreas; Patberg, Lothar; Cott, Andreas
PATENT ASSIGNEE(S):    ThyssenKrupp Steel Europe AG, Germany
SOURCE:                Ger. Offen., 7pp.; Chemical Indexing Equivalent to
                        162:428425 (WO)
                        CODEN: GWXXBX
DOCUMENT TYPE:          Patent
LANGUAGE:               German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102013110417	A1	20150326	DE 2013-102013110417	20130920
WO 2015039986	A2	20150326	WO 2014-EP69603	20140915
WO 2015039986	A3	20150827		
EP 3046704	A2	20160727	EP 2014-771830	20140915
PRIORITY APPLN. INFO.:			DE 2013-102013110417 A	20130920
			WO 2014-EP69603 W	20140915

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AB   The invention relates to metal powder for powder-based prodn. processes
      wherein a component is structured in layers or as a compact green body
      from metal powder and is strengthened by welding or sintering. In order
      that such a metal powder is easily weldable and can be cost-effectively
      produced, and is thus in particular suitable for fast, economically
      efficient prodn. of functional components in large quantities in an
      additive prodn. process (rapid manufg.), the metal powder according to the
      invention has a particle size distribution in the range of 5 - 150 µm
      and contains primarily iron and unavoidable impurities, wherein the iron
      proportion thereof is in the range from 89.6 to 99.9 wt.%. The invention
      further relates to the use of such a metal powder (steel powder) for
      powder-based prodn. processes and a method for producing a metallic
      component through layered structuring and welding or sintering using such
      a metal powder.

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	(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
Anon					DE 10039144 C1	CAPLUS
Anon					WO 2011152774 A1	CAPLUS
IT	1674360-61-2P					
	RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (metal powder for powder-based prodn. processes and method for prodn. of metallic component from metal powder)					
RN	1674360-61-2 CAPLUS					
CN	Iron alloy, base, Fe 90-100,Mn 0-3.8,Si 0-1,Cu 0-0.7,Mo 0-0.6,C 0-0.5,Cr 0-0.4,Ni 0-0.4,Ti 0-0.3,Co 0-0.2,Nb 0-0.2,P 0-0.2,V 0-0.2,B 0-0.1 (CA INDEX NAME)					

Component	Component Percent	Component Registry Number
Fe	90 - 100	7439-89-6
Mn	0 - 3.8	7439-96-5
Si	0 - 1	7440-21-3
Cu	0 - 0.7	7440-50-8
Mo	0 - 0.6	7439-98-7
C	0 - 0.5	7440-44-0
Cr	0 - 0.4	7440-47-3
Ni	0 - 0.4	7440-02-0
Ti	0 - 0.3	7440-32-6
Co	0 - 0.2	7440-48-4
Nb	0 - 0.2	7440-03-1
P	0 - 0.2	7723-14-0
V	0 - 0.2	7440-62-2
B	0 - 0.1	7440-42-8

IPCI B22F0003-10 [I]
 IPCR B22F0003-10 [I]
 CC 55-4 (Ferrous Metals and Alloys)
 ST steel powder metallurgy sintering welding mech property
 IT 1674360-61-2P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (metal powder for powder-based prodn. processes and method for prodn. of metallic component from metal powder)
 OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
 (2 CITINGS)

L13 ANSWER 42 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2015:512916 CAPLUS Full-text
 DOCUMENT NUMBER: 162:428425
 TITLE: Metal powder for powder-based production processes and method for production of a metallic component from metal powder
 INVENTOR(S): Fechte-Heinen, Rainer; Mayer, Stefan; Offergeld, Andreas; Patberg, Lothar; Cott, Andreas
 PATENT ASSIGNEE(S): ThyssenKrupp Steel Europe AG, Germany
 SOURCE: PCT Int. Appl., 16pp.; Chemical Indexing Equivalent to 162:428426 (DE)
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2015039986	A2	20150326	WO 2014-EP69603	20140915
WO 2015039986	A3	20150827		
DE 102013110417	A1	20150326	DE 2013-102013110417	20130920
EP 3046704	A2	20160727	EP 2014-771830	20140915
			DE 2013-102013110417 A	20130920
			WO 2014-EP69603 W	20140915

PRIORITY APPLN. INFO.:
 AB The invention relates to metal powder for powder-based prodn. processes wherein a component is structured in layers or as a compact green body from metal powder and is strengthened by welding or sintering.

that such a metal powder is easily weldable and can be cost-effectively produced, and is thus in particular suitable for fast, economically efficient prodn. of functional components in large quantities in an additive prodn. process (rapid manufg.), the metal powder according to the invention has a particle size distribution in the range of 5 - 150 µm and contains primarily iron and unavoidable impurities, wherein the iron proportion thereof is in the range from 89.6 to 99.9 wt.%. The invention further relates to the use of such a metal powder (steel powder) for powder-based prodn. processes and a method for producing a metallic component through layered structuring and welding or sintering using such a metal powder.

IT 1674360-61-2P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(metal powder for powder-based prodn. processes and method for prodn. of metallic component from metal powder)

RN 1674360-61-2 CAPLUS

CN Iron alloy, base, Fe 90-100, Mn 0-3.8, Si 0-1, Cu 0-0.7, Mo 0-0.6, C 0-0.5, Cr 0-0.4, Ni 0-0.4, Ti 0-0.3, Co 0-0.2, Nb 0-0.2, P 0-0.2, V 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	90 - 100	7439-89-6
Mn	0 - 3.8	7439-96-5
Si	0 - 1	7440-21-3
Cu	0 - 0.7	7440-50-8
Mo	0 - 0.6	7439-98-7
C	0 - 0.5	7440-44-0
Cr	0 - 0.4	7440-47-3
Ni	0 - 0.4	7440-02-0
Ti	0 - 0.3	7440-32-6
Co	0 - 0.2	7440-48-4
Nb	0 - 0.2	7440-03-1
P	0 - 0.2	7723-14-0
V	0 - 0.2	7440-62-2
B	0 - 0.1	7440-42-8

IPCI B22F0007-02 [I]; B22F0007-02 [I]; C22C0033-02 [I]

IPCR B22F0007-02 [I]; C22C0033-02 [I]

CC 55-4 (Ferrous Metals and Alloys)

ST steel powder metallurgy sintering welding mech property

IT 1674360-61-2P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(metal powder for powder-based prodn. processes and method for prodn. of metallic component from metal powder)

L13 ANSWER 43 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2014:2105582 CAPLUS Full-text

DOCUMENT NUMBER: 162:84344

TITLE: Method for hot forming a zinc or zinc alloy coated strip, sheet or blank

INVENTOR(S): Hensen, Guido Cornelis; Verloop, Willem Cornelis; Neelis, Bastiaan Maarten

PATENT ASSIGNEE(S): Tata Steel IJmuiden B.V., Neth.

SOURCE: PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2014198399	A2	20141218	WO 2014-EP1540	20140606
WO 2014198399	A3	20150226		

PRIORITY APPLN. INFO.: EP 2013-3043 A 20130614
EP 2013-4166 A 20130823

AB The invention relates to a method for hot forming a strip, sheet or blank coated with a zinc or zinc based alloy layer to form a hot formed

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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product. According to the invention a no. of specific steps are taken to perform this method within certain limits. The invention also relates to the hot formed product produced using this method.

IT 1639926-81-0
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; method for hot forming zinc or zinc alloy coated strip, sheet or blank)

RN 1639926-81-0 CAPLUS

CN Iron alloy, base, Fe 87-99, Mn 0.5-3.5, W 0-3, Nb 0-2, V 0-2, Cr 0-1, Si 0.1-0.8, C 0.1-0.5, Al 0-0.2, Ti 0-0.2, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	87 - 99	7439-89-6
Mn	0.5 - 3.5	7439-96-5
W	0 - 3	7440-33-7
Nb	0 - 2	7440-03-1
V	0 - 2	7440-62-2
Cr	0 - 1	7440-47-3
Si	0.1 - 0.8	7440-21-3
C	0.1 - 0.5	7440-44-0
Al	0 - 0.2	7429-90-5
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22F0001-16 [I]; C23C0002-06 [I]; C23C0002-26 [I]; C23C0002-28 [I]; C23C0002-40 [I]; C21D0001-673 [I]; C23C0028-00 [I]

IPCR C23C0002-06 [I]; C21D0001-673 [I]; C23C0002-26 [I]; C23C0002-28 [I]; C23C0002-40 [I]; C23C0028-00 [I]

CC 56-6 (Nonferrous Metals and Alloys)

ST steel zinc alloy anticorrosive coating electroplating

IT Anticorrosive coating materials
Electrodeposition
Mechanical hardness
(method for hot forming zinc or zinc alloy coated strip, sheet or blank)

IT 7440-66-6, Zinc, processes 1273147-93-5, Zinc alloy
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for hot forming zinc or zinc alloy coated strip, sheet or blank)

IT 870820-47-6, 22MnB5 1639926-81-0
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; method for hot forming zinc or zinc alloy coated strip, sheet or blank)

L13 ANSWER 44 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2014:1754974 CAPLUS Full-text

DOCUMENT NUMBER: 161:584497

TITLE: Product formed by hot forming of metallic coated steel sheet, method to form the product, and steel strip

INVENTOR(S): Chen, Shangping; Hensen, Guido Cornelis

PATENT ASSIGNEE(S): Tata Steel IJmuiden BV, Neth.

SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2014166630	A1	20141016	WO 2014-EP951	20140409
EP 2984198	A1	20160217	EP 2014-716760	20140409
PRIORITY APPLN. INFO.:			EP 2013-1845	A 20130410
			WO 2014-EP951	W 20140409

AB The invention relates to a product formed by hot forming of a metallic coated steel sheet, wherein the formed product has a substrate layer of hot formed steel, a metal affected zone and a diffusion coating

layer on the substrate layer, and optionally a metal oxide layer on the diffusion coating layer. According to the disclosure, a low carbon zone is present between the substrate layer and the metal affected zone. The invention also relates to a method for producing a metallic coated hot formed product, and to a steel strip to be used in the method.

RETABLER

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
ABE MASAYUKI	2012			US 20120006451 A1	
HENSEN GUIDO CORNELIS	2010			WO 2010069588 A1	CAPLUS
HIRAMATSU TERUSHI	2001			JP 2001064751 A	CAPLUS
KATAGIRI YUKIO	2011			JP 2011208164 A	CAPLUS
Karbasian, H	2010	210	2103	Journal Of Materials	CAPLUS
NAKAMURA NOBUYUKI	2009			EP 2053139 A1	CAPLUS
PUERTA VELASQUEZ JUAN D	2014			WO 2014037627 A1	CAPLUS

IT 1630724-35-4

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(substrate; product formed by hot forming of metallic coated steel sheet, method to form the product, and steel strip)

RN 1630724-35-4 CAPLUS

CN Iron alloy, base, Fe 87-99, Mn 0.5-3, W 0-3, Nb 0-2, V 0-2, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Al 0-0.2, Ti 0-0.2, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	87 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
W	0 - 3	7440-33-7
Nb	0 - 2	7440-03-1
V	0 - 2	7440-62-2
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Al	0 - 0.2	7429-90-5
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22C0038-00 [I]; C21D0001-00 [I]

IPCR C22C0038-00 [I]; C21D0001-00 [I]

CC 55-3 (Ferrous Metals and Alloys)

ST steel sheet strip hot dip metal anticorrosive coating

IT Anticorrosive coating materials

Hot-dip coating process

(product formed by hot forming of metallic coated steel sheet, method to form the product, and steel strip)

IT 39308-06-0D, iron 0.011. 1630724-36-5 1630724-38-7

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(anticorrosive coating; product formed by hot forming of metallic coated steel sheet, method to form the product, and steel strip)

IT 870820-47-6, 22MnB5 1630724-35-4

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(substrate; product formed by hot forming of metallic coated steel sheet, method to form the product, and steel strip)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD
(3 CITINGS)

L13 ANSWER 45 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2014:755736 CAPLUS Full-text

DOCUMENT NUMBER: 160:679480

TITLE: Steel sheets for hot pressing, hot pressed steel

INVENTOR(S): members, and method for manufacture of the members
PATENT ASSIGNEE(S): Miyoshi, Tatsuya; Nakajima, Seiji; Ando, Satoru
SOURCE: JFE Steel Corporation, Japan
PCT Int. Appl., 29pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2014068939	A1	20140508	WO 2013-JP6347	20131028
KR 2015052266	A	20150513	KR 2015-7008668	20131028
KR 1731740	B1	20170428		
CN 104755655	A	20150701	CN 2013-80056511	20131028
CN 104755655	B	20170922		
EP 2915904	A1	20150909	EP 2013-850861	20131028
EP 2915904	B1	20190612		
JP 5888430	B2	20160322	JP 2014-544298	20131028
IN 2015DN02108	A	20150814	IN 2015-DN2108	20150316
IN 302263	B	20181026		
US 20150337415	A1	20151126	US 2015-14438993	20150428
US 10030290	B2	20180724		
PRIORITY APPLN. INFO.:			JP 2012-239973	A 20121031
			WO 2013-JP6347	W 20131028

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB Base steel sheet equipped with galvanized layer and a layer, contg. polysiloxanes having C≥4 functional group, formed in the order is claimed. Preferably, the steel sheet consists of C 0.15-0.5, Si 0.05-2.0, Mn 0.5-3, P ≤0.1, S ≤0.05, Al ≤0.10, N ≤0.010, optionally Cr 0.01-1, Ti ≤0.20, B 0.0005-0.08, and/or Sb 0.003-0.03 wt.%, and balance Fe; the galvanized layer comprises a 0.01-5 g/m2 1st layer of ≥60 wt.% Ni and balance Zn and a 10-90 g/m2 2nd layer of 10-25 wt.% Ni and balance Zn; and the polysiloxane layer also contains less wt. parts (polysiloxane basis) silane coupling agents. Also claimed is the hot pressed member of the given steel having a surface characterized by a ≥0.20 kcps x-ray diffractometry peak for Zn2SiO4 at 2θ = 36.1°. The member is manufd. by heating the sheet to a temp. between Ac3 and 1000°, e.g. at av. heating rate of ≥100°/s, followed by its hot pressing. The members are resistant to pit and crevice corrosion even when used under severe conditions and are esp. suitable for use in automobiles.

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2012			JP 4883240 B1	CAPLUS
KUZE YUKINOBU	2011			WO 2011070859 A1	CAPLUS
SAITO TAKASHI	2007			JP 2007063578 A	CAPLUS
YANO HIROKAZU	2007			JP 2007246775 A	CAPLUS
IT 1609017-11-9D, Sb(0.003-0.03)					
RL: TEM (Technical or engineered material use); USES (Uses)					
(steel sheets having nickel-zinc alloy and polysiloxane coatings for prepn. of hot pressed members showing excellent corrosion resistance)					
RN 1609017-11-9 CAPLUS					
CN Iron alloy, base, Fe 93-99, Mn 0.5-3, Si 0-2, Cr 0-1, C 0.2-0.5, Ti 0.2, Al 0.1, P 0.1, B 0-0.1 (CA INDEX NAME)					

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Ti	0.2	7440-32-6
Al	0.1	7429-90-5
P	0.1	7723-14-0
B	0 - 0.1	7440-42-8

IPCI C23C0028-00 [I]; B21D0022-20 [I]; B32B0015-08 [I]; C21D0001-18 [I];
C21D0009-00 [I]; C22C0018-00 [I]; C22C0019-03 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C25D0005-26 [I]

IPCR C23C0028-00 [I]; B21D0022-20 [I]; B32B0015-08 [I]; C21D0001-18 [I];
C21D0009-00 [I]; C22C0018-00 [I]; C22C0019-03 [I]; C22C0038-00 [I];
C22C0038-60 [I]; C25D0005-26 [I]

CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 42, 56

ST hot pressing steel sheet corrosion resistant; polysiloxane coated
galvanized steel hot pressing; nickel zinc alloy underlayer silicone
coated steel

IT Polysiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(C>4 group-contg., coating on galvanized steel;
steel sheets having nickel-zinc alloy and polysiloxane
coatings for prepn. of hot pressed members showing excellent
corrosion resistance)

IT Polysiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(Me Ph, KR-311; steel sheets having nickel-zinc alloy and
polysiloxane coatings for prepn. of hot pressed members
showing excellent corrosion resistance)

IT Silanes
RL: MOA (Modifier or additive use); USES (Uses)
(coupling agent, in silicone layer; steel sheets
having nickel-zinc alloy and polysiloxane coatings for prepn.
of hot pressed members showing excellent corrosion resistance)

IT Polysiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(epoxy, ES-1001N; steel sheets having nickel-zinc alloy and
polysiloxane coatings for prepn. of hot pressed members
showing excellent corrosion resistance)

IT Epoxy resins
RL: TEM (Technical or engineered material use); USES (Uses)
(polysiloxane-, ES-1001N; steel sheets having nickel-zinc
alloy and polysiloxane coatings for prepn. of hot pressed
members showing excellent corrosion resistance)

IT Metalworking
(pressing; steel sheets having nickel-zinc alloy and
polysiloxane coatings for prepn. of hot pressed members
showing excellent corrosion resistance)

IT Coupling agents
(silane, in silicone layer; steel sheets having
nickel-zinc alloy and polysiloxane coatings for prepn. of hot
pressed members showing excellent corrosion resistance)

IT Corrosion-resistant materials
Hot-press molding
(steel sheets having nickel-zinc alloy and polysiloxane
coatings for prepn. of hot pressed members showing excellent
corrosion resistance)

IT Galvanized steel
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(steel sheets having nickel-zinc alloy and polysiloxane
coatings for prepn. of hot pressed members showing excellent
corrosion resistance)

IT 919-30-2, KBE 903 2602-34-8, KBE 403
RL: MOA (Modifier or additive use); USES (Uses)
(coupling agent, in silicone layer; steel sheets
having nickel-zinc alloy and polysiloxane coatings for prepn.
of hot pressed members showing excellent corrosion resistance)

IT 13597-65-4P, Zinc silicate (Zn₂SiO₄)
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(steel sheets having nickel-zinc alloy and polysiloxane
coatings for prepn. of hot pressed members showing excellent
corrosion resistance)

IT 7440-36-0D, Antimony, trace in alloys 238084-01-0 1379822-01-1
1609017-10-8 1609017-11-9D, Sb(0.003-0.03)
RL: TEM (Technical or engineered material use); USES (Uses)
(steel sheets having nickel-zinc alloy and polysiloxane

coatings for prepn. of hot pressed members showing excellent corrosion resistance)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L13 ANSWER 46 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2014:451007 CAPLUS Full-text

DOCUMENT NUMBER: 160:475772

TITLE: Compression coil springs and their manufacture including coiling process in austenite temperature region

INVENTOR(S): Ono, Yuitirou; Shiraishi, Tohru; Ono, Yoshiki; Takahashi, Keita

PATENT ASSIGNEE(S): NHK Spring Co., Ltd., Japan

SOURCE: PCT Int. Appl., 50pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2014042066	A1	20140320	WO 2013-JP73937	20130905
JP 5361098	B1	20131204	JP 2012-202416	20120914
JP 2014055343	A	20140327		
CN 104619878	A	20150513	CN 2013-80047783	20130905
CN 104619878	B	20161116		
KR 2015054969	A	20150520	KR 2015-7009184	20130905
KR 2191407	B1	20201215		
EP 2896712	A1	20150722	EP 2013-837663	20130905
EP 2896712	B1	20190807		
KR 2020010619	A	20200130	KR 2020-7002286	20130905
US 20150252863	A1	20150910	US 2015-14427106	20150310
US 9752636	B2	20170905		
IN 2015KN00953	A	20151225	IN 2015-KN953	20150407

PRIORITY APPLN. INFO.:

JP 2012-202416	A	20120914
KR 2015-7009184	A3	20130905
WO 2013-JP73937	W	20130905

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The coil springs comprise steel wires with equiv. circle diam. 2.5-10 mm contg. C 0.45-0.80, Si 0.15-2.50, Mn 0.3-1.0 wt.%, and Fe balance, wherein (i) arbitrary cross-sections of the wires show core hardness 570-700HV, (ii) the wires have surface layers with higher-than-av. concn. of C, and (iii) the wires show compressive residual stress ≥ 200 MPa and ≥ 60 MPa at 0.2 mm-depth and 0.4 mm-depth from the surfaces, resp. along the max. principal stress direction under application of compressive load in the inner diam. side of the coil springs. Also claimed are coil springs using steel wires contg. C 0.45-0.80, Si 0.15-2.50, Mn 0.3-1.0, and Cr, B, Ni, Ti, Cu, Nb, V, Mo, and/or W 0.005-4.5 wt.%. The manufg. method, using coil spring forming app. equipped with feed rollers, coiling parts having wire guides, coiling tools, and pitch tools, cutting means, and heating means for raising temp. to austenite region within 2.5 s between the feed roller exits to the coiling tools, includes coiling steel wires by hot forming, cutting, quenching the formed coils still at temp. in austenite region, tempering, shot-peening, setting in this order, and carburizing (between heating and quenching processes) by directly spraying hydrocarbon gas on the wire surfaces. The coil springs with excellent fatigue resistance are esp. useful as automotive valve springs and clutch torsion springs.

RETABLe

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1981			JP 56152921 A	
Anon	1989			JP 01177318 A	CAPLUS
Anon	1992			JP 499126 A	
Anon	1993			JP 586418 A	
Anon	2012			JP 5064590 B1	CAPLUS
HONDA YOSHINORI	2001			JP 2001082518 A	CAPLUS
KONDO SATORU	2000			JP 2000326036 A	CAPLUS
MORITA TOSHIYUKI	2008			JP 2008045178 A	CAPLUS

NISSAN MOTOR | 2012 | | | JP 2012077367 A | CAPLUS
IT 1581259-99-5
RL: TEM (Technical or engineered material use); USES (Uses)
(manuf. of compression coil springs including coiling process in
austenite temp. region)
RN 1581259-99-5 CAPLUS
CN Iron alloy, base, Fe 91-99, B 0-4.5, Cr 0-4.5, Cu 0-4.5, Mo 0-4.5, Nb 0-4.5, Ni
0-4.5, Ti 0-4.5, V 0-4.5, W 0-4.5, Si 0.2-2.5, Mn 0.3-1, C 0.4-0.8 (CA INDEX
NAME)

Component	Component Percent	Component Registry Number
Fe	91 - 99	7439-89-6
B	0 - 4.5	7440-42-8
Cr	0 - 4.5	7440-47-3
Cu	0 - 4.5	7440-50-8
Mo	0 - 4.5	7439-98-7
Nb	0 - 4.5	7440-03-1
Ni	0 - 4.5	7440-02-0
Ti	0 - 4.5	7440-32-6
V	0 - 4.5	7440-62-2
W	0 - 4.5	7440-33-7
Si	0.2 - 2.5	7440-21-3
Mn	0.3 - 1	7439-96-5
C	0.4 - 0.8	7440-44-0

IPCI C22C0038-00 [I]; B21F0003-02 [I]; B21F0035-00 [I]; B24C0001-10 [I];
B24C0011-00 [I]; C21D0001-06 [I]; C21D0007-06 [I]; C21D0008-06 [I];
C21D0009-02 [I]; C22C0038-04 [I]; C22C0038-54 [I]; C23C0008-22 [I];
C23C0008-80 [I]; F16F0001-06 [I]
IPCR C22C0038-00 [I]; B21F0003-02 [I]; B21F0035-00 [I]; B24C0001-10 [I];
B24C0011-00 [I]; C21D0001-06 [I]; C21D0007-06 [I]; C21D0008-06 [I];
C21D0009-02 [I]; C22C0038-04 [I]; C22C0038-54 [I]; C23C0008-22 [I];
C23C0008-80 [I]; F16F0001-06 [I]

CC 55-3 (Ferrous Metals and Alloys)
ST compression coil spring manuf austenite temp region coiling; ~~steel~~ wire
heating quenching tempering shot peening carburizing

IT 1581259-99-5
RL: TEM (Technical or engineered material use); USES (Uses)
(manuf. of compression coil springs including coiling process in
austenite temp. region)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
(2 CITINGS)

L13 ANSWER 47 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2014:174777 CAPLUS Full-text

DOCUMENT NUMBER: 160:297675

TITLE: Hot-dip galvanized ~~steel~~ sheet and manufacturing
method therefor

INVENTOR(S): Fujita, Soshi; Yamanaka, Shintaro

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: PCT Int. Appl., 58pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2014021452	A1	20140206	WO 2013-JP71004	20130802
JP 5648755	B2	20150107	JP 2013-551091	20130802
KR 2015036681	A	20150407	KR 2015-7004127	20130802
KR 1653510	B1	20160901		
CN 104508169	A	20150408	CN 2013-80040033	20130802
CN 104508169	B	20170222		
TW I488978	B	20150621	TW 2013-127806	20130802
BR 112015001809	A2	20170704	BR 2015-112015001809	20130802
BR 112015001809	B1	20201110		
MX 2015001224	A	20150410	MX 2015-1224	20150127
MX 370268	B	20191209		

US 20150225829 A1 20150813 US 2015-14418852 20150130
US 10131981 B2 20181120
IN 2015DN01525 A 20150703 IN 2015-DN1525 20150224
PRIORITY APPLN. INFO.: JP 2012-172739 A 20120803
WO 2013-JP71004 W 20130802

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides a hot-dip galvanized ~~steel~~ sheet having excellent plating wettability and plating adhesion even when the base ~~steel~~ sheet contains Si and Mn, and provides a manufg. method therefor. The galvanized ~~steel~~ sheet pertaining to the present invention includes a base ~~steel~~ sheet contg. Si, Mn, and other predetd. components, and a galvanized ~~layer~~ formed on at least one surface of the base ~~steel~~ sheet. The base ~~steel~~ sheet has an HA value and an HB that satisfy all of the following relational expressions, wherein HA is the av. hardness of the surface ~~layer~~ that extends to a depth of 50 μ m from the interface between the base ~~steel~~ sheet and the galvanized ~~layer~~, and HB is the av. hardness of deep portions in excess of 50 μ m from the interface. $50 \leq HA \leq 500 \dots (1) 50 \leq HB \leq 500 \dots (2) 0.5 \leq HA/HB \leq 0.9 \dots (3)$. The galvanized ~~steel~~ sheet is manufd. by hot-dip galvanizing of a base ~~steel~~ sheet which is processed by annealing and soaking in controlled conditions (details described).

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1999			JP 11343551 A	CAPLUS
MIYATA MAI	2010			JP 2010132975 A	CAPLUS

IT 1428957-53-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(base ~~steel~~ sheet; manuf. of hot-dip galvanized ~~steel~~ sheet contg. Si and Mn in base ~~steel~~ sheet and showing good wettability and plating adhesion)

RN 1428957-53-2 CAPLUS

CN Iron alloy, base, Fe 78-99, Mn 0.5-5, Si 0.1-3, Al 0-1, B 0-1, Ca 0-1, Cr 0-1, Cu 0-1, misch metal 0-1, Mo 0-1, Nb 0-1, Ni 0-1, Ti 0-1, V 0-1, W 0-1, Zr 0-1, C 0-0.5, P 0-0.5 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	78 - 99	7439-89-6
Mn	0.5 - 5	7439-96-5
Si	0.1 - 3	7440-21-3
Al	0 - 1	7429-90-5
B	0 - 1	7440-42-8
Ca	0 - 1	7440-70-2
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Misch metal	0 - 1	8049-20-5
Mo	0 - 1	7439-98-7
Nb	0 - 1	7440-03-1
Ni	0 - 1	7440-02-0
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
W	0 - 1	7440-33-7
Zr	0 - 1	7440-67-7
C	0 - 0.5	7440-44-0
P	0 - 0.5	7723-14-0

IPCI C23C0002-06 [I]; C21D0009-46 [I]; C22C0018-00 [I]; C22C0038-00 [I];
C22C0038-58 [I]; C23C0002-02 [I]; C23C0002-28 [I]
IPCR C23C0002-06 [I]; C21D0009-46 [I]; C22C0018-00 [I]; C22C0038-00 [I];
C22C0038-58 [I]; C23C0002-02 [I]; C23C0002-28 [I]

CC 55-6 (Ferrous Metals and Alloys)

ST hot dip galvanized ~~steel~~ base silicon manganese wettability adhesion;
~~steel~~ annealing soaking hot dip galvanizing base sheet hardness

IT Galvanized ~~steel~~

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hot-dip; manuf. of hot-dip galvanized ~~steel~~ sheet contg. Si and Mn in base ~~steel~~ sheet and showing good wettability and

plating adhesion)

IT Alloying
Annealing
Hot-dip galvanizing
(manuf. of hot-dip galvanized steel sheet contg. Si and Mn in base steel sheet and showing good wettability and plating adhesion)

IT Heat treatment
(soaking; manuf. of hot-dip galvanized steel sheet contg. Si and Mn in base steel sheet and showing good wettability and plating adhesion)

IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7727-37-9, Nitrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(annealing atm.; manuf. of hot-dip galvanized steel sheet contg. Si and Mn in base steel sheet and showing good wettability and plating adhesion)

IT 7440-45-1D, Cerium, trace in alloy 12709-15-8D, Ce 0.02%, P 0.010%, Al 0.04%, processes 144920-07-0D, Ce 0.02%, P 0.019%, Al 0.05%, processes 1428957-53-2
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(base steel sheet; manuf. of hot-dip galvanized steel sheet contg. Si and Mn in base steel sheet and showing good wettability and plating adhesion)

IT 53881-87-1 109581-27-3 109581-29-5 723302-58-7 763111-21-3
1242002-97-6 1554190-57-6 1554190-62-3 1554190-66-7 1554190-71-4
1554190-72-5 1554190-73-6 1554190-78-1 1554190-82-7 1554190-84-9
1554190-88-3 1554190-90-7 1554190-95-2 1554190-99-6 1554191-01-3
1554191-06-8 1554191-11-5 1554191-14-8 1554191-17-1
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(galvanizing layer; manuf. of hot-dip galvanized steel sheet contg. Si and Mn in base steel sheet and showing good wettability and plating adhesion)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
(2 CITINGS)

L13 ANSWER 48 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:1659555 CAPLUS Full-text

DOCUMENT NUMBER: 159:643708

TITLE: Steel sheet provided with Al-Zn-Si base anticorrosive coating offering sacrificial cathodic protection, method for production of a part using the sheet

INVENTOR(S): Allely, Christian; Chassagne, Julie; Corlu, Beril

PATENT ASSIGNEE(S): ArcelorMittal Investigacion y Desarrollo SL, Spain

SOURCE: PCT Int. Appl., 26pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2013156688	A1	20131024	WO 2012-FR149	20120417
CA 2870532	A1	20131024	CA 2012-2870532	20120417
CA 2870532	C	20161213		
AU 2012377741	A1	20141204	AU 2012-377741	20120417
AU 2012377741	B2	20160317		
CN 104302802	A	20150121	CN 2012-80073231	20120417
CN 104302802	B	20170412		
KR 2015008114	A	20150121	KR 2014-7032019	20120417
KR 1667131	B1	20161017		
EP 2839049	A1	20150225	EP 2012-722750	20120417
EP 2839049	B1	20171018		
MX 2014012626	A	20150511	MX 2014-12626	20120417
MX 358552	B	20180823		
JP 2015520797	T	20150723	JP 2015-506274	20120417
JP 6348105	B2	20180627		
KR 2016114735	A	20161005	KR 2016-7026204	20120417

ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

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ES 2652028	T3	20180131	ES 2012-722750	20120417
KR 2018017229	A	20180220	KR 2018-7003561	20120417
KR 1886611	B1	20180809		
EA 30016	B1	20180629	EA 2014-1136	20120417
BR 112014025697	B1	20201020	BR 2014-112014025697	20120417
ZA 2014007327	A	20170830	ZA 2014-7327	20141009
IN 2014CN07902	A	20160701	IN 2014-CN7902	20141028
US 20150284861	A1	20151008	US 2015-14394885	20150617
US 10253418	B2	20190409		

PRIORITY APPLN. INFO.:

KR 2014-7032019	A3	20120417
KR 2016-7026204	A3	20120417
WO 2012-FR149	W	20120417

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a ~~steel~~ sheet provided with a ~~coating~~ offering sacrificial cathodic protection, comprising, wt. %: Zn 5-50, Si 0.1- 15, and optionally Mg up to 10 and up to 0.3 in terms of total content, of addnl. elements, as well as comprising a protective element selected from Sn 0.1-5, In 0.01-0.5 and combinations of same, the remainder consisting of Al. The invention also relates to a method for producing parts by hot or cold pressing and to the resulting parts.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
NIPPON STEEL CORP	2002			EP 1225246 A1	CAPLUS
POSCO	2009			US 20090238715 A1	
THYSSENKRUPP STEEL EURO	2011			WO 2011157690 A1	CAPLUS

IT 1173986-65-6

RL: NUU (Other use, unclassified); USES (Uses)
(~~steel~~ sheet provided with Al-Zn-Si base anticorrosive
~~coating~~ offering sacrificial cathodic protection, method for
prodn. of part using the sheet)

RN 1173986-65-6 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Cu	0 - 0.1	7440-50-8
Ni	0 - 0.1	7440-02-0
P	0 - 0.1	7723-14-0

IPCI C23C0002-04 [I]; C23C0002-12 [I]; C23C0002-28 [I]; C21D0001-673 [I]; C21D0008-02 [I]

IPCR C23C0002-04 [I]; C21D0001-673 [I]; C21D0008-02 [I]; C23C0002-12 [I]; C23C0002-28 [I]

CC 56-3 (Nonferrous Metals and Alloys)

ST ~~steel~~ anticorrosive ~~coating~~ cathodic protection aluminum zinc silicon alloy

IT Anticorrosive ~~coating~~ materials

Cathodic protection
(~~steel~~ sheet provided with Al-Zn-Si base anticorrosive
~~coating~~ offering sacrificial cathodic protection, method for
prodn. of part using the sheet)

IT 1469993-24-5 1469993-25-6 1469993-26-7 1469993-27-8 1469993-28-9
1469993-29-0 1469993-30-3

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(~~coating~~; ~~steel~~ sheet provided with Al-Zn-Si base
anticorrosive ~~coating~~ offering sacrificial cathodic
protection, method for prodn. of part using the sheet)

IT 1173986-65-6

RL: NUU (Other use, unclassified); USES (Uses)

(steel sheet provided with Al-Zn-Si base anticorrosive coating offering sacrificial cathodic protection, method for prodn. of part using the sheet)

IT 12597-69-2, Steel, uses 870820-47-6, 22MnB5
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrate; steel sheet provided with Al-Zn-Si base anticorrosive coating offering sacrificial cathodic protection, method for prodn. of part using the sheet)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD
 (4 CITINGS)

L13 ANSWER 49 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:1612663 CAPLUS Full-text
 DOCUMENT NUMBER: 161:113844
 TITLE: Result prediction of steel carbonization when carbonitriding
 AUTHOR(S): Gliner, R. E.; Vybornov, V. V.; Pryanichnikov, V. A.
 CORPORATE SOURCE: Nizhegorodskii Gosudarstvennyi Tekhnicheskii Universitet, Nizhny Novgorod, Russia
 SOURCE: Tekhnologiya Metallov (2013), (4), 8-14
 CODEN: TMEEAL; ISSN: 1684-2499
 PUBLISHER: OOO "Nauka i Tekhnologii"
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB The features of the steel during carburizing carbonitriding to the coeffs. of absorption and diffusion of carbon. Revealed that complete satn. of carbon and nitrogen results in a significant acceleration of the absorption of carbon and, correspondingly, the speed of the carburizing. The possibility of harmonization of different carburizing alloy steels.

IT 56995-50-7, 20KhGR
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (result prediction of steel carburization during carbonitriding)

RN 56995-50-7 CAPLUS

CN Iron alloy, base, Fe 96-98,Cr 0.75-1.05,Mn 0.70-1.00,Si 0.17-0.37,Cu 0-0.30,Ni 0-0.30,C 0.18-0.24,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhGR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	96 - 98	7439-89-6
Cr	0.75 - 1.05	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
C	0.18 - 0.24	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST carbonitriding steel carburization prediction

IT Absorptivity
 Carbonitriding
 Composition
 Diffusion
 Diffusion coating process
 (result prediction of steel carburization during carbonitriding)

IT 74-82-8, Methane, uses 7664-41-7, Ammonia, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (result prediction of steel carburization during carbonitriding)

IT 39467-50-0, 20KhGNM, processes 56995-50-7, 20KhGR

71390-26-6, 07Kh3GNM 578731-16-5, 20Kh3N3MFBA
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(result prediction of ~~steel~~ carburization during
carbonitriding)

L13 ANSWER 50 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:1460865 CAPLUS Full-text
DOCUMENT NUMBER: 159:503793
TITLE: Hot-pressed zinc-nickel alloy-coated steel article
and its manufacture
INVENTOR(S): Nakajima, Seiji; Miyoshi, Tatsuya; Ando, Satoru
PATENT ASSIGNEE(S): JFE Steel Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:
PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2013185184 A 20130919 JP 2012-49868 20120307
PRIORITY APPLN. INFO.: JP 2012-49868 20120307

AB The hot-pressed article has a plating layer satisfying total deposition
of Zn and Ni 5-90 g/m² and Ni deposition ratio based on the total
deposition 10-25 wt.% on a steel sheet surface and comprises
high-strength parts having tensile strength ≥ 1000 MPa and
low-strength parts having tensile strength < 1000 Pa. The article is
manufd. by heating a steel sheet contg. C 0.15-0.5, Si 0.05-2.0, Mn
0.5-3, P ≤ 0.1 , S ≤ 0.05 , Al ≤ 0.1 , and N ≤ 0.01
wt.% coated with 5-90 g/m² of Zn-(10-25 wt.%) Ni alloy to have
coexistence of high-temp. parts at $\geq A_{c3}$ transformation point and
 $\leq 1000^\circ$ and low-temp. parts at $\geq 0^\circ$ and $< A_{c3}$
transformation point and then starting hot-pressing when the high-temp.
parts become $600-800^\circ$. The article has excellent resistance to
corrosion and chipping after coating and is suitable for automotive parts.

IT 1356847-15-8D, Sb(0.003-0.03%)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(hot-pressed zinc-nickel alloy-coated steel article
having high-strength parts and low-strength parts and its manuf. by
heating coated steel sheet and hot-pressing)

RN 1356847-15-8 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.5-3, Si 0-2, Cr 0-1, C 0.2-0.5, Ti 0-0.2, Al
0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C25D0005-26 [I]; C22C0038-00 [I]; C21D0009-00 [I]; C22C0038-60 [I];
C21D0001-18 [I]

IPCR C25D0005-26 [I]; C21D0001-18 [I]; C21D0009-00 [I]; C22C0038-00 [I];
C22C0038-60 [I]

CC 55-11 (Ferrous Metals and Alloys)

ST zinc nickel alloy coated steel heating hot pressing

IT Heat treatment

Hot-press molding

Metal forming

(hot-pressed zinc-nickel alloy-coated steel article
having high-strength parts and low-strength parts and its manuf. by
heating coated steel sheet and hot-pressing)

IT 7440-36-0D, Antimony, trace in alloy 238084-01-0 1299468-35-1
 1356847-15-8D, Sb(0.003-0.03%)
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (hot-pressed zinc-nickel alloy-coated steel article having high-strength parts and low-strength parts and its manuf. by heating coated steel sheet and hot-pressing)

IT 1379822-01-1
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (primer; hot-pressed zinc-nickel alloy-coated steel article having high-strength parts and low-strength parts and its manuf. by heating coated steel sheet and hot-pressing)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L13 ANSWER 51 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2013:650770 CAPLUS Full-text
 DOCUMENT NUMBER: 158:624577
 TITLE: Anti-scale and anti-corrosion hybrid coatings for steel substrates
 INVENTOR(S): Gordon, Douglas Jesus Figueroa; Harding, Tim; Boehm, Sivasambu; Li, Wu; Weirman, Chris
 PATENT ASSIGNEE(S): Tata Steel UK Limited, UK
 SOURCE: PCT Int. Appl., 15pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2013056847	A1	20130425	WO 2012-EP4384	20121019
PRIORITY APPLN. INFO.:			EP 2011-8421	A 20111019

AB Method of producing a coated steel substrate suitable for hot-forming or other high temp. applications, which comprises the steps of: (i) providing a steel substrate; (ii) prep. a coating mixt. comprising a curable org. component as a first binder, a curable inorg. component as a second binder, a cross-linking component to chem. cross-link the curable org. component and the curable inorg. component, and a metal or metal alloy particle having an aluminum content of at least 50% and a balance of 50% or less of a non-aluminum metal; (iii) applying the mixt. on the steel substrate; (iv) curing the mixt. to produce a dense network structure of the coating on the steel substrate.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cornelis, V	2010			WO 2010069588 A1	CAPLUS
Foscante Raymond E	1981			US 4250074 A	CAPLUS
Gen Electric	2007			WO 2007067203 A1	CAPLUS
Harding, T	2011			WO 2011069663 A2	CAPLUS
Savin Ronald Richard	1990			EP 0385880 A2	CAPLUS
Standke Burkhard	2010			US 20100159144 A1	

IT 1431293-40-1, Aluminum 0-0.1, boron 0-0.1, carbon 0.2-0.5, chromium 0-1, iron 92-99, manganese 0.5-3, molybdenum 0-0.5, niobium 0-0.1, phosphorus 0-0.1, silicon 0.1-2.5, titanium 0-0.2, vanadium 0-0.1
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (antiscale and anticorrosion hybrid coatings for steel substrates)

RN 1431293-40-1 CAPLUS

CN Iron alloy, base, Fe 92-99, Mn 0.5-3, Si 0.1-2.5, Cr 0-1, C 0.2-0.5, Mo 0-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5

Si	0.1	-	2.5	7440-21-3
Cr	0	-	1	7440-47-3
C	0.2	-	0.5	7440-44-0
Mo	0	-	0.5	7439-98-7
Ti	0	-	0.2	7440-32-6
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
Nb	0	-	0.1	7440-03-1
P	0	-	0.1	7723-14-0
V	0	-	0.1	7440-62-2

IPCI C21D0001-68 [I]; C23C0018-02 [I]; C09D0007-12 [I]; C09D0005-10 [I];
C09D0201-10 [I]; C09D0175-04 [I]; C09D0183-04 [I]
IPCR C21D0001-68 [I]; C09D0005-10 [I]; C09D0007-12 [I]; C09D0175-04 [I];
C09D0183-04 [I]; C09D0201-10 [I]; C23C0018-02 [I]
CC 55-6 (Ferrous Metals and Alloys)
ST antiscaling anticorrosion hybrid coating steel
IT Anticorrosive coating materials
Antiscaling coating materials
Binders
(antiscaling and anticorrosion hybrid coatings for
steel substrates)
IT Epoxy resins
Organic compounds
Silanes
RL: NUU (Other use, unclassified); USES (Uses)
(antiscaling and anticorrosion hybrid coatings for
steel substrates)
IT Polyurethanes
RL: NUU (Other use, unclassified); USES (Uses)
(polyester-; antiscaling and anticorrosion hybrid coatings for
steel substrates)
IT Polyesters
RL: NUU (Other use, unclassified); USES (Uses)
(polyurethane-; antiscaling and anticorrosion hybrid coatings
for steel substrates)
IT 108-78-1, 1,3,5-Triazine-2,4,6-triamine, uses 661-20-1, Isocyanate
10344-93-1, Acrylate, uses
RL: NUU (Other use, unclassified); USES (Uses)
(antiscaling and anticorrosion hybrid coatings for
steel substrates)
IT 1273096-81-3, Aluminum alloy 1431293-40-1, Aluminum 0-0.1,
boron 0-0.1, carbon 0.2-0.5, chromium 0-1, iron 92-99, manganese 0.5-3,
molybdenum 0-0.5, niobium 0-0.1, phosphorus 0-0.1, silicon 0.1-2.5,
titanium 0-0.2, vanadium 0-0.1
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(antiscaling and anticorrosion hybrid coatings for
steel substrates)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 52 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:640308 CAPLUS Full-text

DOCUMENT NUMBER: 158:593876

TITLE: High-strength hot-dip galvanized steel sheet with
excellent plating adhesion and formability and its
manufacture

INVENTOR(S): Okamoto, Isamu; Oka, Masaharu; Wakabayashi, Chisato;
Azuma, Masafumi

PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2013076137	A	20130425	JP 2011-217619	20110930
JP 5953693	B2	20160720		

PRIORITY APPLN. INFO.:

JP 2011-217619

20110930

AB The galvanized ~~steel~~ sheet has a ~~steel~~ substrate contg. C 0.05-0.4, Si 0.01-3.0, Mn 0.1-3.0, P ≤0.04, S ≤0.05, N ≤0.01, Al 0.01-2.0, and Si + Al >0.5 wt.% while having microstructure contg. ≥40 vol.% of ferrite main phase, ≥8 vol.% of retained austenite, 3 kinds of martensite defined by using C content and hardness, and 10-0 vol.% of pearlite, (1) a hot-dip galvanized ~~layer~~ contg. <7 wt.% Fe and residual amts. of Zn and Al or (2) a hot-dip galvanized ~~layer~~ contg. 7-15 wt.% Fe and residual amts. of Zn and Al on the substrate, and tensile strength ≥980 MPa. The galvanized ~~steel~~ sheet is manufd. by heating a cast slab at ≥1100° directly or after cooling, final hot-rolling at ≥Ar3 transformation point, winding at ≤700°, pickling, cold-rolling at draft 40-70%, annealing at 730-900°, primary-cooling to 600-750° at rate 0.1-20°/s while satisfying (A) annealing temp. ≥730 and <800°, (B) primary cooling stopping temp. ≥600 and <700°, and/or (C) primary cooling av. rate 0.1-5.0°/s, cooling to ≤450° at rate ≥20°/s, holding at 350-450° for ≥120 s, cooling, grinding the surface ~~layer~~ in thickness ≥0.1 μm for removal, preplating with 0.2-2.0 g/m2 of Ni, heating at rate ≥10°/s to [(galvanizing bath temp.) - 40]° to [(galvanizing bath temp.) + 50]°, galvanizing, and optionally heat-alloying at 470-600° for 10-40 s.

IT 1430730-21-4D, Ca(0.0005-0.01%) Mg(0.0005-0.01%) rare earth metal(0.0005-0.01%)
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (substrate; high-strength hot-dip galvanized ~~steel~~ sheet with excellent plating adhesion and formability and its manuf.)

RN 1430730-21-4 CAPLUS

CN Iron alloy, base, Fe 80-99, Mn 0.1-3, Cr 0-3, Cu 0-3, Ni 0-3, Si 0-3, Al 0-2, Mo 0-1, V 0-0.5, C 0-0.4, Nb 0-0.3, Ti 0-0.3, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	80 - 99	7439-89-6
Mn	0.1 - 3	7439-96-5
Cr	0 - 3	7440-47-3
Cu	0 - 3	7440-50-8
Ni	0 - 3	7440-02-0
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Mo	0 - 1	7439-98-7
V	0 - 0.5	7440-62-2
C	0 - 0.4	7440-44-0
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C23C0002-06 [I];
 C23C0002-28 [I]; C23C0002-40 [I]; C22C0038-00 [I]; C22C0038-60 [I];
 C21D0009-46 [I]; C23C0002-06 [I]; C23C0002-28 [I]; C23C0002-40 [I]

IPCR C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-60 [I]; C23C0002-06 [I];
 C23C0002-28 [I]; C23C0002-40 [I]

CC 55-6 (Ferrous Metals and Alloys)

ST hot dip galvanized ~~steel~~ sheet manuf plating adhesion formability

IT Annealing

Cold rolling

Cooling

Galvannealing

Grinding (machining)

Hot rolling

Hot-dip galvanizing

(high-strength hot-dip galvanized ~~steel~~ sheet with excellent plating adhesion and formability and its manuf.)

IT Rare earth metals

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(trace in alloy, substrate; high-strength hot-dip galvanized ~~steel~~ sheet with excellent plating adhesion and formability and its manuf.)

IT 1431127-89-7
 RL: TEM (Technical or engineered material use); USES (Uses)
 (galvanized layer; high-strength hot-dip galvanized
 steel sheet with excellent plating adhesion and formability and
 its manuf.)

IT 1430730-23-6
 RL: TEM (Technical or engineered material use); USES (Uses)
 (galvannealed layer; high-strength hot-dip galvanized
 steel sheet with excellent plating adhesion and formability and
 its manuf.)

IT 7440-02-0, Nickel, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (precoating with; high-strength hot-dip galvanized steel
 sheet with excellent plating adhesion and formability and its manuf.)

IT 12244-31-4, Austenite, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (retained, steel substrate microstructure component;
 high-strength hot-dip galvanized steel sheet with excellent
 plating adhesion and formability and its manuf.)

IT 12173-93-2, Martensite, uses 12427-24-6, Ferrite (ferrous metal
 component) 12427-27-9, Pearlite
 RL: TEM (Technical or engineered material use); USES (Uses)
 (steel substrate microstructure component; high-strength
 hot-dip galvanized steel sheet with excellent plating
 adhesion and formability and its manuf.)

IT 7439-95-4D, Magnesium, trace in alloy 7440-70-2D, Calcium, trace in
 alloy 1430730-20-3 1430730-21-4D, Ca(0.0005-0.01%)
 Mg(0.0005-0.01%) rare earth metal(0.0005-0.01%)
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (substrate; high-strength hot-dip galvanized steel sheet with
 excellent plating adhesion and formability and its manuf.)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L13 ANSWER 53 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:637081 CAPLUS Full-text
 DOCUMENT NUMBER: 158:608421
 TITLE: Hot-dip galvanized steel sheet with high tensile
 strength and excellent formability and its manufacture
 INVENTOR(S): Wakabayashi, Chisato; Azuma, Masafumi; Okamoto, Riki;
 Fujita, Nobuhiro; Takahashi, Manabu
 PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2013076148	A	20130425	JP 2011-217995	20110930
JP 5699889	B2	20150415		

PRIORITY APPLN. INFO.: JP 2011-217995 20110930

AB The galvanized steel sheet has a steel substrate contg. C 0.05-0.4, Si
 0.01-3.0, Mn 0.1-3.0, P ≤0.04, S ≤0.05, N ≤0.01, Al
 0.01-2.0, and Si + Al >0.5 wt.% while having microstructure contg.
 ≥40 vol.% total of main phase consisting of ≥1 kind of
 martensite selected from 3 kinds defined by using C content including
 cementite and hardness and bainite, ≥8 vol.% of austenite,
 ≤10 vol.% of pearlite, and a residual amt. of ferrite, (1) a
 hot-dip galvanized layer contg. <7 wt.% Fe and residual amts. of Zn and
 Al or (2) a hot-dip galvannealed layer contg. 7-15 wt.% Fe and residual
 amts. of Zn and Al on the substrate, and tensile strength ≥980 MPa.
 The galvanized steel sheet is manufd. by heating a cast slab at
 ≥1200° directly or after cooling, final hot-rolling at
 ≥Ar3 transformation point, winding at ≤700°,
 pickling, cold-rolling at draft 40-70%, annealing at 730-900°,
 primary-cooling to 650-750° at rate 0.1-50°/s, cooling to
 ≤450° at rate ≥20°/s, holding at
 350-450° for ≥120 s, cooling, pickling, grinding the surface

layer in thickness $\geq 0.1 \mu\text{m}$ for removal, preplating with 0.2-2.0 g/m² of Ni, heating at rate $\geq 10^\circ/\text{s}$ to [(galvanizing bath temp.) - 40] $^\circ$ to [(galvanizing bath temp.) + 50] $^\circ$, galvanizing by dipping in a bath flowing at flow rate 10-50 m/min, and optionally heat-alloying at 470-600 $^\circ$ for 10-40 s. The galvanized sheet shows good ductility and hole-expanding property.

IT 1431057-05-4B, Ca(0.0005-0.01%) Mg(0.0005-0.01%) rare earth metal(0.0005-0.01%)
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (substrate; hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

RN 1431057-05-4 CAPLUS

CN Iron alloy, base, Fe 86-100, Mn 0.1-3, Si 0-3, Al 0-2, Cr 0-1, Cu 0-1, Mo 0-1, Ni 0-1, V 0-0.5, C 0-0.4, Nb 0-0.3, Ti 0-0.3, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	86 - 100	7439-89-6
Mn	0.1 - 3	7439-96-5
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
V	0 - 0.5	7440-62-2
C	0 - 0.4	7440-44-0
Nb	0 - 0.3	7440-03-1
Ti	0 - 0.3	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C21D0009-46 [I]; C22C0018-00 [I]; B21B0003-00 [I]; C23C0002-06 [I]; C23C0002-40 [I]; C23C0002-02 [I]; C23C0002-28 [I]; C22C0038-00 [I]; C22C0038-60 [I]; C21D0009-46 [I]; C22C0018-00 [I]; B21B0003-00 [I]; C23C0002-06 [I]; C23C0002-40 [I]; C23C0002-02 [I]; C23C0002-28 [I]

IPCR C22C0038-00 [I]; B21B0003-00 [I]; C21D0009-46 [I]; C22C0018-00 [I]; C22C0038-06 [I]; C22C0038-58 [I]; C23C0002-02 [I]; C23C0002-06 [I]; C23C0002-28 [I]; C23C0002-40 [I]; C22C0038-60 [I]

CC 55-6 (Ferrous Metals and Alloys)

ST hot dip galvanized ~~steel~~ sheet manuf tensile strength formability

IT Annealing
 Cold rolling
 Cooling
 Galvannealing
 Grinding (machining)
 Hot rolling
 Hot-dip galvanizing
 Pickling
 (hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

IT Recrystallization
 (texture; hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

IT Rare earth metals
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (trace in alloy, substrate; hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

IT 1431127-89-7, (Aluminum + zinc) 93-100, iron 0-7
 RL: TEM (Technical or engineered material use); USES (Uses)
 (galvanized ~~layer~~; hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

IT 1430730-23-6, (Aluminum + zinc) 85-93, iron 7-15
 RL: TEM (Technical or engineered material use); USES (Uses)
 (galvannealed ~~layer~~; hot-dip galvanized ~~steel~~ sheet with high tensile strength and excellent formability and its manuf.)

IT 7440-02-0, Nickel, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (precoating with; hot-dip galvanized ~~steel~~ sheet with high

tensile strength and excellent formability and its manuf.)

IT 12169-32-3, Cementite 12173-93-2, Martensite, uses 12244-31-4, Austenite, uses 12427-23-5, Bainite 12427-24-6, Ferrite (ferrous metal component) 12427-27-9, Pearlite

RL: TEM (Technical or engineered material use); USES (Uses)
(steel substrate microstructure component; hot-dip galvanized steel sheet with high tensile strength and excellent formability and its manuf.)

IT 7439-95-4D, Magnesium, trace in alloy 7440-70-2D, Calcium, trace in alloy 1428932-65-3 1431057-05-4D, Ca(0.0005-0.01%) Mg(0.0005-0.01%) rare earth metal(0.0005-0.01%)

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(substrate; hot-dip galvanized steel sheet with high tensile strength and excellent formability and its manuf.)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L13 ANSWER 54 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:515313 CAPLUS Full-text
DOCUMENT NUMBER: 158:510556
TITLE: Steel sheet having hot-dip galvanized layer and exhibiting superior plating wettability and plating adhesion, and production method therefor
INVENTOR(S): Fujita, Soshi; Yamanaka, Shintaro; Sato, Koichi
PATENT ASSIGNEE(S): Nippon Steel & Sumitomo Metal Corporation, Japan
SOURCE: PCT Int. Appl., 66pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2013047804	A1	20130404	WO 2012-JP75189	20120928
CA 2848949	A1	20130404	CA 2012-2848949	20120928
CA 2848949	C	20160920		
KR 2014053322	A	20140507	KR 2014-7006759	20120928
KR 1624810	B1	20160526		
CN 103827342	A	20140528	CN 2012-80047145	20120928
CN 103827342	B	20160622		
MX 2014003789	A	20140710	MX 2014-3789	20120928
MX 359228	B	20180920		
EP 2762601	A1	20140806	EP 2012-835446	20120928
EP 2762601	B1	20180530		
TW I465581	B	20141221	TW 2012-135905	20120928
JP 5648741	B2	20150107	JP 2013-514485	20120928
RU 2584060	C2	20160520	RU 2014-117496	20120928
BR 112014007509	A2	20170404	BR 2014-112014007509	20120928
ES 2680649	T3	20180910	ES 2012-835446	20120928
IN 2014DN02028	A	20150313	IN 2014-DN2028	20140318
US 20140234656	A1	20140821	US 2014-14346618	20140321
US 9752221	B2	20170905		
ZA 2014002254	A	20150826	ZA 2014-2254	20140326
JP 2015038245	A	20150226	JP 2014-173185	20140827
JP 5907221	B2	20160426		

PRIORITY APPLN. INFO.: JP 2011-217144 A 20110930
JP 2013-514485 A3 20120928
WO 2012-JP75189 W 20120928

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Provided are a steel sheet that has a hot-dip galvanized layer and that exhibits superior plating wettability and plating adhesion, and a prodn. method therefor. A steel sheet contg. readily oxidizable elements including Si and Mn is used as a base material. The hot-dip galvanized steel sheet has a hot-dip galvanized layer (A) on the surface of the steel sheet and is characterized by having a (B) layer that is directly under the surface of and inside of the steel sheet. The (B) layer has a thickness of 0.001 μm to 0.5 μm. By mass, the (B) layer contains 50 mass% or more of unoxidized Fe, less than 50 mass% total of one or more oxides of Fe, Si, Mn, P, S, and/or Al, and contains unoxidized C, Si, Mn, P, S, and/or Al in the following quantities: less

than 0.05 mass% of C; less than 0.1 mass% of Si; less than 0.5 mass% of Mn; less than 0.001 mass% of P; less than 0.001 mass% of S; and less than 0.005 mass% of Al. The ~~steel~~ sheet has a compn. contg. C 0.05-0.50, Si 0.1-3.0, Mn 0.5-5.0, P 0.001-0.5, S 0.001-0.03, Al 0.005-1.0, and balance Fe and inevitable impurities.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
NKK Corp	2001			JP 2001200352 A	CAPLUS
Nippon Steel Corp	2001			JP 2001226742 A	CAPLUS
Nippon Steel Corp	2003			CN 101125473 A	CAPLUS
Nippon Steel Corp	2003			EP 1504134 A	CAPLUS
Nippon Steel Corp	2003			CN 1639375 A	CAPLUS
Nippon Steel Corp	2003			WO 2002101112 A2	CAPLUS
Nippon Steel Corp	2003			AU 2002304255 A	CAPLUS
Nippon Steel Corp	2003			JP 2003171752 A	CAPLUS
Nippon Steel Corp	2003			US 20040202889 A1	CAPLUS
Nippon Steel Corp	2003			KR 20070026882 A	
Nippon Steel Corp	2003			KR 20070026883 A	
Nippon Steel Corp	2003			US 20080035247 A1	CAPLUS
Nippon Steel Corp	2003			US 20090272467 A1	CAPLUS
Nippon Steel Corp	2003			BR 210265 A	
Nippon Steel Corp	2003			CA 2449604 A1	CAPLUS
Nippon Steel Corp	2003			TW 573021 B	CAPLUS
Nippon Steel Corp	2003			DE 60220191 D	
Nippon Steel Corp	2003			DE 60220191 T	

IT 1428957-53-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(manuf. of hot-dip galvanized ~~steel~~ sheet by annealing cold rolled ~~steel~~ sheet in H-contg. atm. before galvanizing)

RN 1428957-53-2 CAPLUS

CN Iron alloy, base, Fe 78-99,Mn 0.5-5,Si 0.1-3,Al 0-1,B 0-1,Ca 0-1,Cr 0-1,Cu 0-1,misch metal 0-1,Mo 0-1,Nb 0-1,Ni 0-1,Ti 0-1,V 0-1,W 0-1,Zr 0-1,C 0-0.5,P 0-0.5 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====	=====	=====
Fe	78 - 99	7439-89-6
Mn	0.5 - 5	7439-96-5
Si	0.1 - 3	7440-21-3
Al	0 - 1	7429-90-5
B	0 - 1	7440-42-8
Ca	0 - 1	7440-70-2
Cr	0 - 1	7440-47-3
Cu	0 - 1	7440-50-8
Misch metal	0 - 1	8049-20-5
Mo	0 - 1	7439-98-7
Nb	0 - 1	7440-03-1
Ni	0 - 1	7440-02-0
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
W	0 - 1	7440-33-7
Zr	0 - 1	7440-67-7
C	0 - 0.5	7440-44-0
P	0 - 0.5	7723-14-0

IPCI C23C0002-06 [I]; C22C0018-00 [I]; C22C0038-00 [I]; C22C0038-06 [I];
C22C0038-58 [I]; C23C0002-02 [I]; C23C0002-40 [I]
IPCR C23C0002-06 [I]; C22C0018-00 [I]; C22C0038-00 [I]; C22C0038-06 [I];
C22C0038-58 [I]; C23C0002-02 [I]; C23C0002-40 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 56

ST hot dip galvanization ~~steel~~ sheet pretreatment annealing hydrogen atm

IT Water vapor

(annealing in atm. contg.; manuf. of hot-dip galvanized ~~steel~~ sheet by annealing cold rolled ~~steel~~ sheet in H-contg. atm. before galvanizing)

IT Annealing

(in H-contg. atm.; manuf. of hot-dip galvanized ~~steel~~ sheet

by annealing cold rolled steel sheet in H-contg. atm. before galvanizing)

IT Cold rolling
Hot rolling
Hot-dip galvanizing
(manuf. of hot-dip galvanized steel sheet by annealing cold rolled steel sheet in H-contg. atm. before galvanizing)

IT Controlled atmospheres
(reducing, annealing in; manuf. of hot-dip galvanized steel sheet by annealing cold rolled steel sheet in H-contg. atm. before galvanizing)

IT 1333-74-0, Hydrogen, uses 7727-37-9, Nitrogen, uses 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(annealing in atm. contg.; manuf. of hot-dip galvanized steel sheet by annealing cold rolled steel sheet in H-contg. atm. before galvanizing)

IT 1428957-52-1 1428957-53-2
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(manuf. of hot-dip galvanized steel sheet by annealing cold rolled steel sheet in H-contg. atm. before galvanizing)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
(2 CITINGS)

L13 ANSWER 55 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2013:11896 CAPLUS Full-text
DOCUMENT NUMBER: 158:137246
TITLE: Heat-treated hardened steel with excellent impact performance, and method for manufacturing heat-treated hardened type component using the same

INVENTOR(S): Nam, Seung-Man; Im, Hee-Joong; Lee, Seung-Ha; Kim, Dong-Eun; Lee, Bo-Ryong; Kim, Young-Jin; Moon, Man-Been

PATENT ASSIGNEE(S): Hyundai Hysco, S. Korea
SOURCE: PCT Int. Appl., 21pp.; Chemical Indexing Equivalent to 156:209484 (KR)
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2013002441	A1	20130103	WO 2011-KR4785	20110630
KR 1108838	B1	20120131	KR 2011-64159	20110630
CN 103534372	A	20140122	CN 2011-80070743	20110630
CN 103534372	B	20160210		
EP 2728027	A1	20140507	EP 2011-868749	20110630
EP 2728027	B1	20190116		
US 20140083574	A1	20140327	US 2013-14115516	20131104
US 20160281190	A1	20160929	US 2016-15173200	20160603
PRIORITY APPLN. INFO.:			KR 2011-64159	A 20110630
			WO 2011-KR4785	W 20110630
			US 2013-14115516	A3 20131104

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The title heat-treated hardened steel contains (by wt.%) C 0.12-0.8, Cr 0.01-2, Mo <0.2, B 0.0005-0.08, Sb <1.0, at least one of Ti and Nb <0.2, Si, Mn, Al and Ni satisfying one of content formulas i to iii (content formula i: Si 0.5-3, Mn 1-10 and Al 0.05-2; content formula ii: Si 0.5-3, Mn 1-10, Al <0.1 and Ni 0.01-8; content formula iii: Si 0.5-3, Mn 1-10, Al 0.1-2.5 and Ni 0.01-8), and Fe and other unavoidable impurities as balance. The heat-treated hardened steel has improved impact performance, tensile strength ≥ 1000 MPa, yield strength ≥ 800 MPa and elongation $\geq 10\%$. The heat-treated hardened steel has optionally a coating layer of Al-Si, Zn and oxidn.-resistant materials.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Hyundai Hysco	2011			KR 101033767 B1	

Jfe Steel Kk	2005			JP 2005126817 A	CAPLUS
Jfe Steel Kk	2005			JP 2005126817 A	CAPLUS
Jfe Steel Kk	2005			JP 2005126818 A	CAPLUS
Nippon Steel Corp	2002			JP 2002294397 A	CAPLUS

IT 1356391-47-3 1356391-49-5 1356391-50-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(heat-treated hardened steel with excellent impact
performance, and method for manufg. heat-treated hardened type
component using the same)

RN 1356391-47-3 CAPLUS

CN Iron alloy, base, Fe 80-98,Mn 1-10,Si 0.5-3,Al 0-2,Cr 0-2,Sb 0-1,C
0.1-0.8,Mo 0-0.2,Nb 0-0.2,Ti 0-0.2,B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	80 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Si	0.5 - 3	7440-21-3
Al	0 - 2	7429-90-5
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

RN 1356391-49-5 CAPLUS

CN Iron alloy, base, Fe 74-98,Mn 1-10,Ni 0-8,Si 0.5-3,Cr 0-2,Sb 0-1,C
0.1-0.8,Mo 0-0.2,Nb 0-0.2,Ti 0-0.2,Al 0-0.1,B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	74 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Ni	0 - 8	7440-02-0
Si	0.5 - 3	7440-21-3
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8

RN 1356391-50-8 CAPLUS

CN Iron alloy, base, Fe 72-98,Mn 1-10,Ni 0-8,Si 0.5-3,Al 0.1-2.5,Cr 0-2,Sb
0-1,C 0.1-0.8,Mo 0-0.2,Nb 0-0.2,Ti 0-0.2,B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	72 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Ni	0 - 8	7440-02-0
Si	0.5 - 3	7440-21-3
Al	0.1 - 2.5	7429-90-5
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

IPCI C22C0038-00 [I]; C21D0009-46 [I]; C22C0038-58 [I]; C21D0008-00 [I];
C23C0002-04 [I]

IPCR C22C0038-00 [I]; C21D0008-00 [I]; C21D0009-46 [I]; C22C0038-58 [I];

CC C23C0002-04 [I]
55-3 (Ferrous Metals and Alloys)
ST thermally hardened ~~steel~~ impact resistance strength
IT Elongation, mechanical
Galvanizing
Heat treatment
Tensile strength
Yield strength
(heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)
IT 1356391-47-3 1356391-49-5 1356391-50-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)
IT 7440-66-6, Zinc, uses 11099-22-2
RL: TEM (Technical or engineered material use); USES (Uses)
(heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)

L13 ANSWER 56 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2012:665719 CAPLUS Full-text
DOCUMENT NUMBER: 156:594034
TITLE: Method for manufacturing automobile part having different local strengths using heat-treatment hardening ~~steel~~ plate
INVENTOR(S): Nam, Seung-Man; Chae, Su-Hong; Kwon, Min-Suck; Kim, Hyo-Sub; Im, Hee-Joong; Lee, Bo-Ryong; Moon, Man-Been
PATENT ASSIGNEE(S): Hyundai Hysco, S. Korea
SOURCE: PCT Int. Appl., 19pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2012060496	A1	20120510	WO 2010-KR7829	20101108
KR 1033767	B1	20110509	KR 2010-108528	20101103
CN 102712962	A	20121003	CN 2010-80038066	20101108
CN 102712962	B	20170524		
JP 2013501631	T	20130117	JP 2012-541934	20101108
JP 5509337	B2	20140604		
EP 2636759	A1	20130911	EP 2010-855727	20101108
EP 2636759	B1	20190605		
US 20120216920	A1	20120830	US 2012-13390537	20120215
US 20150167111	A1	20150618	US 2015-14630390	20150224
PRIORITY APPLN. INFO.:			KR 2010-108528	A 20101103
			WO 2010-KR7829	W 20101108
			US 2012-13390537	A3 20120215

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to a method for manufg. automobile parts having different local strengths, and more specifically, to a method for manufg. automobile parts using a heat-treatment hardened ~~steel~~ having different local thicknesses. The present invention provides a method for manufg. automobile parts comprising: a blank sheet prepn. step for prepg. blank sheets using a heat-treatment hardening ~~steel~~ plate having different thicknesses, and a heat-treatment hardening ~~steel~~ plate having different materials, according to the strength required; a blank conjugate forming step for forming a blank conjugate by connecting the blank sheets using laser welding; a cold molding step for cold press molding the blank conjugates; and a heat-treatment hardening step for heating the cold-molded part to above AC3 temp., then resolving mold retention stress by quenching the part when constrained in a metal mold, and enhancing the strength thereby.

RETABLER

Referenced Author (RAU)		Year (RPY)		VOL (RVL)		PG (RPG)		Referenced Work (RWK)		Referenced File
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=====+=====+=====+=====+=====+=====
Aisin Takaoka Ltd      |2004 |      |      |JP 2004058082 A      |CAPLUS
Hyundai Hysco          |2009 |      |      |KR 100902857 B1     |
Sumitomo Metal Ind Ltd |2007 |      |      |JP 2007154257 A      |CAPLUS
Voestalpine Automotive |2006 |      |      |WO 2006015849 A2     |CAPLUS

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IT 1374118-68-9
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manufg. automobile part having different local strengths
 using heat-treatment hardening ~~steel~~ plate)

RN 1374118-68-9 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.2-0.5, Ti
 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1, S 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.2 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0
S	0 - 0.1	7704-34-9

IPCI C21D0008-02 [I]; C21D0001-00 [I]; B21D0022-00 [I]; B23K0026-20 [I]

IPCR C21D0008-02 [I]; B21D0022-00 [I]; B23K0026-20 [I]; C21D0001-00 [I]

CC 55-5 (Ferrous Metals and Alloys)

ST ~~steel~~ heat treatment welding molding hardening zinc coating automobile

IT Automobile parts

Coating materials

Cold-press molding

Hardening (mechanical)

Heat treatment

Laser welding

Quenching (cooling)

(method for manufg. automobile part having different local strengths
 using heat-treatment hardening ~~steel~~ plate)

IT Stress, mechanical

(residual; method for manufg. automobile part having different local
 strengths using heat-treatment hardening ~~steel~~ plate)

IT 7429-90-5, Aluminum, processes 7440-66-6, Zinc, processes 11133-86-1

RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)

(~~coating~~; method for manufg. automobile part having different
 local strengths using heat-treatment hardening ~~steel~~ plate)

IT 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1,

Niobium, uses 7440-36-0, Antimony, uses 7440-48-4, Cobalt, uses

7440-50-8, Copper, uses

RL: MOA (Modifier or additive use); USES (Uses)

(method for manufg. automobile part having different local strengths
 using heat-treatment hardening ~~steel~~ plate)

IT 1297459-46-1, processes 1297459-50-7, processes 1374118-68-9

1374118-70-3, processes 1374118-73-6

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)

(method for manufg. automobile part having different local strengths
 using heat-treatment hardening ~~steel~~ plate)

L13 ANSWER 57 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2012:340397 CAPLUS Full-text

DOCUMENT NUMBER: 156:316277

TITLE: Method for manufacture ~~coated~~ ~~steel~~ parts by hot
 forming

INVENTOR(S): Verloop, Willem Cornelis; Genderen, Marc Jacco Van;
 Tol, Ronald Theodoor Van; Hensen, Guido Cornelis;
 Loiseaux, Jenny

PATENT ASSIGNEE(S): Tata Steel IJmuiden BV, Neth.

SOURCE: PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2012028224	A1	20120308	WO 2011-EP3601	20110719
CA 2809187	A1	20120308	CA 2011-2809187	20110719
CN 103108964	A	20130515	CN 2011-80041783	20110719
CN 103108964	B	20150617		
EP 2611945	A1	20130710	EP 2011-734020	20110719
EP 2611945	B1	20180228		
KR 2013099042	A	20130905	KR 2013-7006164	20110719
JP 2013542315	T	20131121	JP 2013-525155	20110719
BR 112013004952	A2	20160816	BR 2013-112013004952	20110719
ES 2663005	T3	20180410	ES 2011-734020	20110719
US 9127329	B2	20150908	US 2013-13818041	20130220
US 20130153094	A1	20130620		
MX 2013002063	A	20130405	MX 2013-2063	20130221
IN 2013CN02333	A	20160603	IN 2013-CN2333	20130325
PRIORITY APPLN. INFO.:			EP 2010-9041	A 20100831
			WO 2011-EP3601	W 20110719

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a method for manufg. a coated part having high mech. properties using hot forming techniques. The method comprises the following steps: providing an annealed steel strip or blank or pre-shaped part that was coated with a metal or alloy before the annealing; cutting a blank from the strip before or after the annealing; optionally forming a pre-shaped part from the blank; heating the blank or pre-shaped part to a temp. of 500° at an av. heating rate of 16°/s or more; further heating the blank or pre-shaped part to a temp. between 700 and 1000°; hot forming the blank or pre-shaped part into a hot formed part; hardening the hot formed part. The steel has the following compn., wt.%: C 0.1-0.5, Mn 0.5-3.0, Si 0.1-0.5, Cr <1.0, Ti <0.2, Al <0.1, P <0.1, S <0.05, B 0.0005-0.08, optionally Nb and V <0.1 each, and Fe - the balance. The coating is a zinc alloy comprising Al and Mg 1.0-5.0 wt.% each. The invention also relates to a method for manufg. a coated steel strip, blank or pre-shaped part, and to a coated steel strip, blank, or part and a hot formed part.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cornelis, V	2010			WO 2010069588 A1	CAPLUS
Kazuh, K	2010			WO 2010005121 A1	CAPLUS
Thyssenkrupp Steel Ag	2009			DE 102008022400 A1	CAPLUS
Voestalpine Stahl GmbH	2010			EP 2177641 A1	CAPLUS
Volks	2010			WO 2010085983 A1	CAPLUS

IT 1360605-36-2

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for manuf. coated steel parts by hot forming)

RN 1360605-36-2 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Nb 0-0.1, P 0-0.1, V 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0

IPCI C21D0008-04 [I]; C21D0009-46 [I]; C22C0038-02 [I]; C22C0038-04 [I];
 C21D0001-673 [I]; C21D0009-48 [I]
 IPCR C21D0008-04 [I]; C21D0001-673 [I]; C21D0009-46 [I]; C21D0009-48 [I];
 C22C0038-02 [I]; C22C0038-04 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 ST steel strip coating hot deformation
 IT Plastic deformation
 (hot; method for manuf. coated steel parts by hot forming)
 IT 1360605-37-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; method for manuf. coated steel parts by hot forming)
 IT 1360605-36-2
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manuf. coated steel parts by hot forming)
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)

L13 ANSWER 58 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2012:296418 CAPLUS Full-text
 DOCUMENT NUMBER: 156:290294
 TITLE: Steel sheet for hot pressing, its manufacturing method, and hot-pressed material
 INVENTOR(S): Nakajima, Seiji; Nakamaru, Hiroki
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2012041610	A	20120301	JP 2010-184840	20100820
JP 5672849	B2	20150218		

PRIORITY APPLN. INFO.: JP 2010-184840 20100820

AB The steel sheet for hot pressing has an Al-Fe alloy coating layer contg. Fe 25-90%, Si 25-90%, and the balance of Al and inevitable impurities at an amt. of 10-200 g/m2 per one side of the steel sheet, and it is obtained from a steel sheet contg. C 0.15-0.5, Si 0.05-2.0, Mn 0.5-3, P ≤0.1, S ≤0.05, Al ≤0.1 and N ≤0.01% by hot-dipping in an Al system bath to form the Al-Fe alloy layer and then hot-dip coated with an Al layer. The steel sheet is heated to Ac3 to 1000°C and hot pressed.

IT 1356847-15-8
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (steel sheet for hot pressing, its manufg. method, and hot-pressed material)

RN 1356847-15-8 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.5-3, Si 0-2, Cr 0-1, C 0.2-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C23C0002-12 [I]; C22C0038-60 [I]; C22C0038-00 [I]; C22C0021-00 [I];
C23C0002-20 [I]; C23C0002-28 [I]; C23C0002-12 [I]; C22C0038-60 [I];
C22C0038-00 [I]; C22C0021-00 [I]; C23C0002-20 [I]; C23C0002-28 [I]
IPCR C23C0002-12 [I]; C22C0021-00 [I]; C22C0038-00 [I]; C22C0038-60 [I];
C23C0002-20 [I]; C23C0002-28 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST ~~steel~~ sheet aluminum iron alloy ~~coating~~ hot pressing
IT Hot-dip ~~coating~~ process
Hot-press sintering
(~~steel~~ sheet for hot pressing, its manufg. method, and
hot-pressed material)
IT 1359940-94-5 1359940-95-6
RL: TEM (Technical or engineered material use); USES (Uses)
(~~coating~~; ~~steel~~ sheet for hot pressing, its manufg.
method, and hot-pressed material)
IT 1299468-35-1 ~~1356847-15-8~~
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(~~steel~~ sheet for hot pressing, its manufg. method, and
hot-pressed material)
IT 7429-90-5, Aluminum, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(~~steel~~ sheet for hot pressing, its manufg. method, and
hot-pressed material)
OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD
(3 CITINGS)

L13 ANSWER 59 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2012:274720 CAPLUS Full-text

DOCUMENT NUMBER: 156:290355

TITLE: Method for manufacturing ~~steel~~ product with
different strength using laser heat treatment

INVENTOR(S): Lim, Hui Jung; Nam, Seung Man; Lee, Bo Ryong; Kim,
Gyeong Bo; Jung, Yeon Il

PATENT ASSIGNEE(S): Hyundai Hysco Co., Ltd., S. Korea

SOURCE: Repub. Korea, 10pp.

CODEN: KRXXFC

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 1119173	B1	20120222	KR 2011-100174	20110930
WO 2013047939	A1	20130404	WO 2011-KR7703	20111017
CN 103842527	A	20140604	CN 2011-80073901	20111017
EP 2762577	A1	20140806	EP 2011-873399	20111017
EP 2762577	B1	20160427		
JP 2014534334	T	20141218	JP 2014-533173	20111017
JP 5898772	B2	20160406		
US 20140227553	A1	20140814	US 2014-14343955	20140310
US 20150211086	A1	20150730	US 2015-14683933	20150410
PRIORITY APPLN. INFO.:			KR 2011-100174	A 20110930
			WO 2011-KR7703	W 20111017
			US 2014-14343955	A3 20140310

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The title method comprises: (1) prepg. material composed of, by wt.%, : C
0.1-0.5, Si 0.1-0.5, Mn 0.5-3.0, P <0.1, S <0.05, Cr 0.01-1.0, Al <0.1, Ti
<0.2, B 0.0005-0.08, and Fe and unavoidable impurities as balance, (2)
forming the material into a preset shape to obtain a formed body, and (3)
performing laser heat treatment for the part needing high strength on the
formed body to locally strengthen the high-strength part. In the method,
it is possible to perform local strengthening using laser heat treatment.

IT ~~1358890-23-9~~
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(method for manufg. ~~steel~~ product with different strength
using laser heat treatment)

RN 1358890-23-9 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.1-0.5, Si 0.1-0.5, Ti
0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.1 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C21D0001-09 [I]; C22C0038-38 [I]; C23C0002-04 [I]

IPCR C21D0001-09 [I]; C22C0038-38 [I]; C23C0002-04 [I]

CC 55-12 (Ferrous Metals and Alloys)

ST ~~steel~~ molding laser heat treatment mech property

IT Heat treatment

(laser; method for manufg. ~~steel~~ product with different strength using laser heat treatment)

IT Lasers

Mechanical properties

Molding

(method for manufg. ~~steel~~ product with different strength using laser heat treatment)

IT 7429-90-5, Aluminum, processes 7440-66-6, Zinc, processes 11133-86-1 12635-57-3

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(~~coating~~; method for manufg. ~~steel~~ product with different strength using laser heat treatment)

IT ~~1358890-23-9~~

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(method for manufg. ~~steel~~ product with different strength using laser heat treatment)

L13 ANSWER 60 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2012:198116 CAPLUS Full-text

DOCUMENT NUMBER: 156:236353

TITLE: ~~Steel~~ sheet for hot stamping, and process for manufacturing hot-stamped ~~steel~~ products using

~~steel~~ sheet for hot stamping

INVENTOR(S): Nakajima, Seiji; Miyoshi, Tatsuya; Nakamaru, Hiroki

PATENT ASSIGNEE(S): JFE Steel Corporation, Japan

SOURCE: PCT Int. Appl., 23pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2012018014	A1	20120209	WO 2011-JP67680	20110802
JP 4883240	B1	20120222	JP 2011-157378	20110719
JP 2012233247	A	20121129		
CA 2806263	A1	20120209	CA 2011-2806263	20110802
CA 2806263	C	20140325		
AU 2011286715	A1	20130214	AU 2011-286715	20110802
AU 2011286715	B2	20131205		
CN 103038398	A	20130410	CN 2011-80037013	20110802
CN 103038398	B	20141203		
KR 2013045898	A	20130506	KR 2013-7001759	20110802
KR 1361605	B1	20140211		
EP 2602359	A1	20130612	EP 2011-814639	20110802
EP 2602359	B1	20181010		
ZA 2013000566	A	20140326	ZA 2013-566	20110802
RU 2520847	C1	20140627	RU 2013-104193	20110802
MY 154711	A	20150715	MY 2013-333	20110802
BR 112013002586	A2	20160607	BR 2013-112013002586	20110802

BR 112013002586	B1	20201027		
TW I451004	B	20140901	TW 2011-127564	20110803
US 20130122322	A1	20130516	US 2013-13813328	20130130
US 9023488	B2	20150505		
IN 2013KN00256	A	20130705	IN 2013-KN256	20130130
IN 292658	B	20180209		
MX 2013001343	A	20130322	MX 2013-1343	20130201
PRIORITY APPLN. INFO.:			JP 2010-174957	A 20100804
			JP 2011-553	A 20110105
			JP 2011-91633	A 20110418
			JP 2011-157378	A 20110719
			WO 2011-JP67680	W 20110802

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The purpose of the present invention is to provide a ~~steel~~ sheet which is to be hot-stamped and which can yield hot-stamped products with excellent pitting corrosion resistance and a process for manufg. hot-stamped ~~steel~~ products using the ~~steel~~ sheet. A ~~steel~~ sheet for hot stamping, characterized by bearing, successively on the surface of a substrate ~~steel~~ sheet, a plating layer (I) which contains at least 60% by mass of Ni, with the balance consisting of Zn and unavoidable impurities, and which has a plating wt. of 0.01 to 5 g/m2, and a plating layer (II) which contains 10 to 25% by mass of Ni, with the balance consisting of Zn and unavoidable impurities, and which has a plating wt. of 10 to 90 g/m2.

RETABALE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kobe Steel Ltd	1995			JP 07166371 A	CAPLUS
Sumitomo Metal Industri	1999			JP 11-350198 A	CAPLUS
Sumitomo Metal Industri	2003			CN 101144162 A	CAPLUS
Sumitomo Metal Industri	2003			EP 1439240 A1	CAPLUS
Sumitomo Metal Industri	2003			CN 1575348 A	CAPLUS
Sumitomo Metal Industri	2003			WO 2003035922 A1	
Sumitomo Metal Industri	2003			JP 2003129209 A	CAPLUS
Sumitomo Metal Industri	2003			JP 200373774 A	
Sumitomo Metal Industri	2003			US 20040166360 A1	CAPLUS
Sumitomo Metal Industri	2003			US 20050252262 A1	
Sumitomo Metal Industri	2003			KR 20060090309 A	
Sumitomo Metal Industri	2003			AT 468416 T	CAPLUS
Sumitomo Metal Industri	2003			DE 60236447 D	
United Technologies Cor	2004			SG 134989 A	CAPLUS
United Technologies Cor	2004			EP 1405934 A2	CAPLUS
United Technologies Cor	2004			CN 1497065 A	CAPLUS
United Technologies Cor	2004			KR 20040026618 A	
United Technologies Cor	2004			US 20040058189 A1	CAPLUS
United Technologies Cor	2004			JP 2004115914 A	CAPLUS
United Technologies Cor	2004			US 20050058848 A1	CAPLUS
United Technologies Cor	2004			CA 2441718 A	CAPLUS
United Technologies Cor	2004			CA 2441718 A1	CAPLUS
United Technologies Cor	2004			TW 276707 B	
United Technologies Cor	2004			BR 304193 A	
United Technologies Cor	2004			AT 397683 T	CAPLUS
United Technologies Cor	2004			DE 60321435 D	

IT 1356847-15-8

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(~~steel~~ sheet for hot stamping, and process for manufg.
hot-stamped ~~steel~~ products using ~~steel~~ sheet for
hot stamping)

RN 1356847-15-8 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.5-3, Si 0-2, Cr 0-1, C 0.2-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Si	0 - 2	7440-21-3
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0

Ti	0	-	0.2	7440-32-6
Al	0	-	0.1	7429-90-5
B	0	-	0.1	7440-42-8
P	0	-	0.1	7723-14-0

IPCI C25D0005-26 [I]; B21D0022-20 [I]; C22C0018-00 [I]; C22C0019-03 [I];
C22C0038-00 [I]; C22C0038-60 [I]
IPCR C25D0005-26 [I]; B21D0022-20 [I]; C22C0018-00 [I]; C22C0019-03 [I];
C22C0038-00 [I]; C22C0038-60 [I]
CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 72
ST hot stamping ~~steel~~ sheet nickel zinc alloy electrodeposition
IT Metalworking
(stamping; ~~steel~~ sheet for hot stamping, and process for
manufg. hot-stamped ~~steel~~ products using ~~steel~~
sheet for hot stamping)
IT Electrodeposition
Pitting corrosion
(~~steel~~ sheet for hot stamping, and process for manufg.
hot-stamped ~~steel~~ products using ~~steel~~ sheet for
hot stamping)
IT Polysiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(~~steel~~ sheet for hot stamping, and process for manufg.
hot-stamped ~~steel~~ products using ~~steel~~ sheet for
hot stamping)
IT 7440-02-0, Nickel, uses 238084-01-0
RL: TEM (Technical or engineered material use); USES (Uses)
(~~coating~~; ~~steel~~ sheet for hot stamping, and process
for manufg. hot-stamped ~~steel~~ products using ~~steel~~
sheet for hot stamping)
IT 7631-86-9, Colloidal silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(colloidal; ~~steel~~ sheet for hot stamping, and process for
manufg. hot-stamped ~~steel~~ products using ~~steel~~
sheet for hot stamping)
IT 1299468-35-1 1356847-15-8
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(~~steel~~ sheet for hot stamping, and process for manufg.
hot-stamped ~~steel~~ products using ~~steel~~ sheet for
hot stamping)
IT 3227-63-2, Zirconium acetate 11138-49-1, Sodium aluminate 12627-14-4,
Lithium silicate 39302-37-9, Lithium titanate
RL: TEM (Technical or engineered material use); USES (Uses)
(~~steel~~ sheet for hot stamping, and process for manufg.
hot-stamped ~~steel~~ products using ~~steel~~ sheet for
hot stamping)
OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD
(5 CITINGS)

L13 ANSWER 61 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2012:169521 CAPLUS Full-text
DOCUMENT NUMBER: 156:209484
TITLE: Heat-treated hardened ~~steel~~ with excellent impact
performance, and method for manufacturing heat-treated
hardened type component using the same
INVENTOR(S): Nam, Seung Man; Lim, Hui Jung; Lee, Seung Ha; Kim,
Dong Eun; Lee, Bo Ryong; Kim, Yeong Jin; Moon, Man Bin
PATENT ASSIGNEE(S): Hyundai Hysco Co., Ltd., S. Korea
SOURCE: Repub. Korea, 14pp.; Chemical Indexing Equivalent to
158:137246 (WO)
CODEN: KRXXFC
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 1108838	B1	20120131	KR 2011-64159	20110630
WO 2013002441	A1	20130103	WO 2011-KR4785	20110630

CN 103534372	A	20140122	CN 2011-80070743	20110630
CN 103534372	B	20160210		
EP 2728027	A1	20140507	EP 2011-868749	20110630
EP 2728027	B1	20190116		
US 20140083574	A1	20140327	US 2013-14115516	20131104
US 20160281190	A1	20160929	US 2016-15173200	20160603
PRIORITY APPLN. INFO.:			KR 2011-64159	A 20110630
			WO 2011-KR4785	W 20110630
			US 2013-14115516	A3 20131104

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The title heat-treated hardened ~~steel~~ contains (by wt.%) C 0.12-0.8, Cr 0.01-2, Mo <0.2, B 0.0005-0.08, Sb <1.0, at least one of Ti and Nb <0.2, Si, Mn, Al and Ni satisfying one of content formulas i to iii (content formula i: Si 0.5-3, Mn 1-10 and Al 0.05-2; content formula ii: Si 0.5-3, Mn 1-10, Al <0.1 and Ni 0.01-8; content formula iii: Si 0.5-3, Mn 1-10, Al 0.1-2.5 and Ni 0.01-8), and Fe and other unavoidable impurities as balance. The heat-treated hardened ~~steel~~ has improved impact performance, tensile strength ≥ 1000 MPa, yield strength ≥ 800 MPa and elongation $\geq 10\%$. The heat-treated hardened ~~steel~~ has optionally a coating layer of Al-Si, Zn and oxidn.-resistant materials.

IT 1356391-47-3 1356391-49-5 1356391-50-8
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)

RN 1356391-47-3 CAPLUS

CN Iron alloy, base, Fe 80-98, Mn 1-10, Si 0.5-3, Al 0-2, Cr 0-2, Sb 0-1, C 0.1-0.8, Mo 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Si	0.5 - 3	7440-21-3
Al	0 - 2	7429-90-5
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
B	0 - 0.1	7440-42-8

RN 1356391-49-5 CAPLUS

CN Iron alloy, base, Fe 74-98, Mn 1-10, Ni 0-8, Si 0.5-3, Cr 0-2, Sb 0-1, C 0.1-0.8, Mo 0-0.2, Nb 0-0.2, Ti 0-0.2, Al 0-0.1, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	74 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Ni	0 - 8	7440-02-0
Si	0.5 - 3	7440-21-3
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8

RN 1356391-50-8 CAPLUS

CN Iron alloy, base, Fe 72-98, Mn 1-10, Ni 0-8, Si 0.5-3, Al 0.1-2.5, Cr 0-2, Sb 0-1, C 0.1-0.8, Mo 0-0.2, Nb 0-0.2, Ti 0-0.2, B 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	72 - 98	7439-89-6
Mn	1 - 10	7439-96-5
Ni	0 - 8	7440-02-0
Si	0.5 - 3	7440-21-3
Cr	0 - 2	7440-47-3
Sb	0 - 1	7440-36-0
C	0.1 - 0.8	7440-44-0
Mo	0 - 0.2	7439-98-7
Nb	0 - 0.2	7440-03-1
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8

Fe	72	-	98	7439-89-6
Mn	1	-	10	7439-96-5
Ni	0	-	8	7440-02-0
Si	0.5	-	3	7440-21-3
Al	0.1	-	2.5	7429-90-5
Cr	0	-	2	7440-47-3
Sb	0	-	1	7440-36-0
C	0.1	-	0.8	7440-44-0
Mo	0	-	0.2	7439-98-7
Nb	0	-	0.2	7440-03-1
Ti	0	-	0.2	7440-32-6
B	0	-	0.1	7440-42-8

IPCI C22C0038-00 [I]; C21D0009-46 [I]; C21D0008-00 [I]; C23C0002-04 [I]
 IPCR C22C0038-00 [I]; C21D0008-00 [I]; C21D0009-46 [I]; C23C0002-04 [I]
 CC 55-3 (Ferrous Metals and Alloys)
 ST thermally hardened ~~steel~~ impact resistance strength
 IT Elongation, mechanical
 Galvanizing
 Heat treatment
 Tensile strength
 Yield strength
 (heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)
 IT 1356391-47-3 1356391-49-5 1356391-50-8
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)
 IT 7440-66-6, Zinc, uses 11099-22-2
 RL: TEM (Technical or engineered material use); USES (Uses)
 (heat-treated hardened ~~steel~~ with excellent impact performance, and method for manufg. heat-treated hardened type component using the same)

L13 ANSWER 62 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2010:880522 CAPLUS Full-text
 DOCUMENT NUMBER: 153:180874
 TITLE: Process for manufacture of high tensile strength hot-dip galvanized ~~steel~~ sheet with uniform galvanized coating
 Yamanaka, Shintaro
 INVENTOR(S):
 PATENT ASSIGNEE(S): Nippon Steel Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2010156029	A	20100715	JP 2009-199	20090105
JP 5594559	B2	20140924		

PRIORITY APPLN. INFO.: JP 2009-199 20090105

AB The base ~~steel~~ comprises C 0.001-0.3, Si 0.5-2.0, Mn 1.0-3.0, P 0.002-0.2, S 0.001-0.03, Al 0.005-1 wt.%, and balance Fe. The manufg. process includes continuous hot-dip galvanization. When a ~~steel~~ sheet is put into plating bath, the sheet temp. is 100-180° higher than the plating bath temp. The plating bath temp. is kept 440-470°. Optionally the base ~~steel~~ contains total 0.05-1.0 wt.% Ti, Nb, B, Cr, and/or Mo. The galvanized ~~steel~~ sheet has uniform galvanized coating and good appearance.

IT 1234653-91-8
 RL: TEM (Technical or engineered material use); USES (Uses)
 (base ~~steel~~; manuf. of high tensile strength hot-dip galvanized ~~steel~~ sheet with uniform galvanized coating)

RN 1234653-91-8 CAPLUS

CN Iron alloy, base, Fe 92-98, Mn 1-3, Si 0.5-2, Al 0-1, B 0-1, Cr 0-1, Mo 0-1, Nb ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

Page 1366 of 1430

0-1,Ti 0-1,C 0-0.3,P 0-0.2 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	92 - 98	7439-89-6
Mn	1 - 3	7439-96-5
Si	0.5 - 2	7440-21-3
Al	0 - 1	7429-90-5
B	0 - 1	7440-42-8
Cr	0 - 1	7440-47-3
Mo	0 - 1	7439-98-7
Nb	0 - 1	7440-03-1
Ti	0 - 1	7440-32-6
C	0 - 0.3	7440-44-0
P	0 - 0.2	7723-14-0

IPCI C23C0002-06 [I]; C23C0002-40 [I]; C22C0038-00 [I]; C22C0038-06 [I];
C22C0038-38 [I]; C21D0009-46 [I]; C23C0002-06 [I]; C23C0002-40 [I];
C22C0038-00 [I]; C22C0038-06 [I]; C22C0038-38 [I]; C21D0009-46 [I]
IPCR C23C0002-06 [I]; C21D0009-46 [I]; C22C0038-00 [I]; C22C0038-06 [I];
C22C0038-38 [I]; C23C0002-40 [I]
CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 56
ST high tensile strength hot dip galvanized steel
IT Hot-dip galvanizing
(continuous; manuf. of high tensile strength hot-dip galvanized
steel sheet with uniform galvanized coating)
IT Galvanized steel
RL: TEM (Technical or engineered material use); USES (Uses)
(hot-dip; manuf. of high tensile strength hot-dip galvanized
steel sheet with uniform galvanized coating)
IT 12697-71-1, uses 57923-89-4 144920-07-0, uses 797752-03-5, uses
1234653-91-8 1234653-92-9, uses 1234653-94-1, uses
1234653-96-3 1234653-97-4, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(base steel; manuf. of high tensile strength hot-dip
galvanized steel sheet with uniform galvanized
coating)

L13 ANSWER 63 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2010:267926 CAPLUS Full-text

DOCUMENT NUMBER: 152:316673

TITLE: Aluminum-containing copper alloy-coated steel
member and its manufacture by thermal diffusion of
aluminum

INVENTOR(S): Fujii, Takahiro; Tadano, Masayoshi; Hiraoka, Masashi;
Izumi, Keiji

PATENT ASSIGNEE(S): Nisshin Steel Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2010047791	A	20100304	JP 2008-211413	20080820
JP 5561920	B2	20140730		

PRIORITY APPLN. INFO.: JP 2008-211413 20080820

AB The steel member has a Cu alloy coating layer with thickness 0.5-100
µm and Al content 1-15 wt.%. The coating layer may have compn. of
Al 1-15, Ni ≤7, Fe ≤6, Cr ≤2, Mn ≤2 wt.%, and
balance Cu at the center of the thickness. The manufg. process includes
plating a steel substrate contg. 1-20 wt.% Al with Cu and heating at
600-1050° in nonoxidizing atm. for diffusion of Al from the
substrate to the Cu plating layer. The Cu plating layer may be formed
on a Ni undercoating layer by electrodeposition. The coating layer
has good adhesion to the substrate. Al-contg. Cu alloy-coated steel
members can be manufd. at a low cost and they have excellent resistance to
oxidn., corrosion, and wear.

IT 1213779-75-9
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (substrate before diffusion; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

RN 1213779-75-9 CAPLUS

CN Iron alloy, base, Fe 0-99,Cr 0-35,Ni 0-24,Al 1-20,Cu 0-6,Mn 0-5,Mo 0-5,Si 0-3,B 0-1,C 0-1,Nb 0-1,Ti 0-1,V 0-1,N 0-0.5,Ca 0-0.1,Mg 0-0.1,misch metal 0-0.1,P 0-0.1,Y 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	0 - 99	7439-89-6
Cr	0 - 35	7440-47-3
Ni	0 - 24	7440-02-0
Al	1 - 20	7429-90-5
Cu	0 - 6	7440-50-8
Mn	0 - 5	7439-96-5
Mo	0 - 5	7439-98-7
Si	0 - 3	7440-21-3
B	0 - 1	7440-42-8
C	0 - 1	7440-44-0
Nb	0 - 1	7440-03-1
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
N	0 - 0.5	17778-88-0
Ca	0 - 0.1	7440-70-2
Mg	0 - 0.1	7439-95-4
Misch metal	0 - 0.1	8049-20-5
P	0 - 0.1	7723-14-0
Y	0 - 0.1	7440-65-5

IPCI C23C0010-28 [I]; C22C0009-01 [I]; C22C0009-06 [I]; C22C0009-00 [I];
 C22C0009-05 [I]; C22C0038-00 [I]; C22C0038-58 [I]; C21D0009-46 [I];
 C22C0038-06 [I]; C23C0010-28 [I]; C22C0009-01 [I]; C22C0009-06 [I];
 C22C0009-00 [I]; C22C0009-05 [I]; C22C0038-00 [I]; C22C0038-58 [I];
 C21D0009-46 [I]; C22C0038-06 [I]; C25D0005-26 [I]; C25D0005-50 [I]

IPCR C23C0010-28 [I]; C21D0009-46 [I]; C22C0009-00 [I]; C22C0009-01 [I];
 C22C0009-05 [I]; C22C0009-06 [I]; C22C0038-00 [I]; C22C0038-06 [I];
 C22C0038-58 [I]; C25D0005-26 [I]; C25D0005-50 [I]

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 56

ST aluminum copper alloy coated steel manuf diffusion

IT Coating materials

(abrasion-resistant; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT Abrasion-resistant materials

(coatings; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT Anticorrosive coating materials

Thermal diffusion

(manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT Chemically resistant coating materials

(oxidation-resistant; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT 1213779-71-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(coating; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT 1213779-73-7 1213779-74-8

RL: MSC (Miscellaneous)

(coating; manuf. of Al-contg. Cu alloy-coated steel members by thermal diffusion of Al from steel substrate to Cu plating layer)

IT 7440-50-8, Copper, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(plating layer; manuf. of Al-contg. Cu alloy-coated
steel members by thermal diffusion of Al from steel
substrate to Cu plating layer)

IT 12597-69-2, Steel, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate after diffusion; manuf. of Al-contg. Cu alloy-coated
steel members by thermal diffusion of Al from steel
substrate to Cu plating layer)

IT 1197343-32-0 1213779-75-9 1213779-76-0 1213779-77-1
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrate before diffusion; manuf. of Al-contg. Cu alloy-
coated steel members by thermal diffusion of Al from
steel substrate to Cu plating layer)

IT 7440-02-0, Nickel, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(undercoating layer; manuf. of Al-contg. Cu alloy-
coated steel members by thermal diffusion of Al from
steel substrate to Cu plating layer)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 64 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2009:1460891 CAPLUS Full-text

DOCUMENT NUMBER: 151:574971

TITLE: Composite with a ballistic protective effect

INVENTOR(S): Becker, Jens-Ulrik; Hofmann, Harald; Hoeckling,
Christian; Kern, Andreas; Schriever, Udo; Tamler,
Horst Walter; Tschersich, Hans-Joachim

PATENT ASSIGNEE(S): ThyssenKrupp Steel Europe A.-G., Germany

SOURCE: Eur. Pat. Appl., 18pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 2123447	A1	20091125	EP 2008-103856	20080507
EP 2123447	B1	20181226		
ES 2709433	T3	20190416	ES 2008-103856	20080507
US 20120174752	A1	20120712	US 2009-436415	20090506
US 8545993	B2	20131001		

PRIORITY APPLN. INFO.: EP 2008-103856 A 20080507

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The composite with a ballistic protective effect contains a 1st outer
layer made of an alloy steel and ≥1 2nd layer made of an
alloy steel which is arranged below the 1st layer. The 1st alloy
steel contains C 0.06-1.05, Si 0.05-1.65, Mn 0.3-2.65, Al 0.015-1.55, Cr
≤1.2, Ti ≤0.13, Mo ≤0.7, Nb ≤0.1, B
≤0.005, P ≤0.08, S ≤0.01, Ni ≤4.0, and V
≤0.5%. The 2nd alloy steel contains C ≤1.0, Si
≤8.0, Mn 0.05-30.0, Al ≤10.0, Cr ≤10.0, Ti
≤0.5, Nb ≤0.5, B ≤0.1, V ≤0.5, Mo ≤5.0,
P ≤0.1, S ≤0.03, N ≤0.3, Ni ≤8.0, Cu
≤3.0, and Sn ≤0.04%. The 2nd layer has a higher
elongation than that of the 1st layer. Typically, the composite is
produced by roll plating. The composite has enhanced ballistic
properties; decreased wall thicknesses of parts are required. The
composite is esp. suitable for motor vehicles and structural parts.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Allegheny Ludlum Corp	1996			EP 0731332 A	CAPLUS
Boehler & Co Ag Geb	1976			GB 1444063 A	CAPLUS
Creusot Loire	1992			EP 0509854 A	CAPLUS
Grell Karl-Ludwig	1995			US 5418074 A	CAPLUS
Junius Hans-Toni	2003			US 20030029530 A1	CAPLUS
Leger Jacques	1993			US 5213905 A	CAPLUS

Liebowitz, B	1948			US 2438759 A	
Nippon Steel Corp	1994			JP 06093370 A	CAPLUS
Pircher Hans	1987			US 4645720 A	CAPLUS
Thyssenkrupp Steel Ag	2006			DE 102005006606 B3	
Voest Alpine Ag	1983			AT 372113 B	
Voest Alpine Ag	1987			EP 0247020 A	CAPLUS

IT 1196665-70-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in prodn. of composite with ballistic protective effect)
 RN 1196665-70-9 CAPLUS
 CN Iron alloy, base, Fe 23-100,Mn 0-30,Al 0-10,Cr 0-10,Ni 0-8,Si 0-8,Mo
 0-5,Cu 0-3,C 0-1,Nb 0-0.5,Ti 0-0.5,V 0-0.5,N 0-0.3,B 0-0.1,P 0-0.1 (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	23 - 100	7439-89-6
Mn	0 - 30	7439-96-5
Al	0 - 10	7429-90-5
Cr	0 - 10	7440-47-3
Ni	0 - 8	7440-02-0
Si	0 - 8	7440-21-3
Mo	0 - 5	7439-98-7
Cu	0 - 3	7440-50-8
C	0 - 1	7440-44-0
Nb	0 - 0.5	7440-03-1
Ti	0 - 0.5	7440-32-6
V	0 - 0.5	7440-62-2
N	0 - 0.3	17778-88-0
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI B32B0015-01 [I]; C21D0009-42 [I]; F41H0005-04 [I]
 IPCR B32B0015-01 [I]; C21D0009-42 [I]; F41H0005-04 [I]
 CC 55-4 (Ferrous Metals and Alloys)
 ST ~~steel~~ laminated composite
 IT 1196665-67-4 1196665-70-9 1196665-73-2, uses 1196665-75-4
 1196665-77-6 1196665-79-8
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in prodn. of composite with ballistic protective effect)
 OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD
 (8 CITINGS)

L13 ANSWER 65 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 2009:887390 CAPLUS Full-text
 DOCUMENT NUMBER: 151:202847
 TITLE: Method for manufacturing stamped ~~coated~~ ~~steel~~ products
 INVENTOR(S): Drillet, Pascal; Spehner, Dominique; Kefferstein,
 Ronald
 PATENT ASSIGNEE(S): ArcelorMittal France, Fr.
 SOURCE: PCT Int. Appl., 27pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2009090555	A1	20090723	WO 2009-IB322	20090112
WO 2009090443	A1	20090723	WO 2008-IB79	20080115
CA 2713685	A1	20090723	CA 2009-2713685	20090112
CA 2713685	C	20120320		
KR 2010112602	A	20101019	KR 2010-7017170	20090112
EP 2242863	A1	20101027	EP 2009-701846	20090112
EP 2242863	B1	20140108		
CN 101910426	A	20101208	CN 2009-80102269	20090112
JP 2011512455	T	20110421	JP 2010-542705	20090112
JP 6146941	B2	20170614		
KR 2013008657	A	20130122	KR 2013-7000047	20090112
KR 1508861	B1	20150407		

RU 2499847	C2	20131127	RU 2010-134002	20090112
ES 2448551	T3	20140314	ES 2009-701846	20090112
BR 2009007223	A2	20150714	BR 2009-7223	20090112
BR 2009007223	B1	20170606		
MX 2010007428	A	20100903	MX 2010-7428	20100705
IN 2010CN04187	A	20110107	IN 2010-CN4187	20100706
IN 289869	B	20171201		

PRIORITY APPLN. INFO.:

WO 2008-IB79	A	20080115
KR 2010-7017170	A3	20090112
WO 2009-IB322	W	20090112

AB The invention relates to a process for making a hot stamped coated steel sheet product. The methods comprises the steps of pre-coating a steel strip or sheet by aluminum or aluminum-iron-silicon alloy, cutting said pre-coated strip to obtain a pre-coated steel blank, heating the blank in a furnace preheated to a temp. and during a time defined by diagram according to thickness, at a heating rate Vc of 4-12°/s between 20 and 700° and at a heating rate Vc' of 1.5 and 6°/s between 500 and 700°, to obtain a heated blank. Further steps include transferring said heated blank to a die, hot stamping, cooling at a mean rate Vr of at least 30°/s between the exit of the heated blank from the furnace and down to 400°.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kefferstein Ronald	2001			US 20010042393 A1	
Lorraine Laminage	2000			EP 0971044 A	CAPLUS
Nissan Motor	2004			EP 1380666 A	CAPLUS
Usinor	2003			FR 2833504 A	CAPLUS

IT 1173986-65-6

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for manufg. stamped coated steel products)

RN 1173986-65-6 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Cu	0 - 0.1	7440-50-8
Ni	0 - 0.1	7440-02-0
P	0 - 0.1	7723-14-0

IPCI C21D0008-02 [I]; C22C0038-32 [I]; C22C0038-38 [I]; B21D0053-26 [I]; C23C0002-12 [I]

IPCR C21D0008-02 [I]; B21D0053-26 [I]; C22C0038-32 [I]; C22C0038-38 [I]; C23C0002-12 [I]

CC 55-11 (Ferrous Metals and Alloys)

ST steel aluminum coating hot stamping

IT Hot-dip coating process

(method for manufg. stamped coated steel products)

IT Metalworking

(stamping, hot; method for manufg. stamped coated steel products)

IT 1173986-72-5

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(interdiffusion layer; method for manufg. stamped coated steel products)

IT 1173986-68-9

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(intermediate and superficial layer; method for manufg.)

IT 1173986-67-8 1173986-76-9
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (intermediate layer; method for manufg. stamped coated steel products)

IT 1173986-70-3 1173986-74-7
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (intermetallic layer; method for manufg. stamped coated steel products)

IT 952598-91-3 1058743-89-7
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (main coating; method for manufg. stamped coated steel products)

IT 1173986-65-6 1173986-66-7, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (method for manufg. stamped coated steel products)

IT 1173986-77-0
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (superficial layer; method for manufg. stamped coated steel products)

L13 ANSWER 66 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2009:887389 CAPLUS Full-text
 DOCUMENT NUMBER: 151:202846
 TITLE: Method for manufacturing stamped coated steel products
 INVENTOR(S): Drillet, Pascal; Spehner, Dominique; Kefferstein, Ronald
 PATENT ASSIGNEE(S): ArcelorMittal France, Fr.
 SOURCE: PCT Int. Appl., 27pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2009090443	A1	20090723	WO 2008-IB79	20080115
CA 2713685	A1	20090723	CA 2009-2713685	20090112
CA 2713685	C	20120320		
WO 2009090555	A1	20090723	WO 2009-IB322	20090112
KR 2010112602	A	20101019	KR 2010-7017170	20090112
EP 2242863	A1	20101027	EP 2009-701846	20090112
EP 2242863	B1	20140108		
CN 101910426	A	20101208	CN 2009-80102269	20090112
JP 2011512455	T	20110421	JP 2010-542705	20090112
JP 6146941	B2	20170614		
KR 2013008657	A	20130122	KR 2013-7000047	20090112
KR 1508861	B1	20150407		
RU 2499847	C2	20131127	RU 2010-134002	20090112
ES 2448551	T3	20140314	ES 2009-701846	20090112
CN 104651590	A	20150527	CN 2014-10799052	20090112
BR 2009007223	A2	20150714	BR 2009-7223	20090112
BR 2009007223	B1	20170606		
ZA 2010004497	A	20110330	ZA 2010-4497	20100625
MX 2010007428	A	20100903	MX 2010-7428	20100705
IN 2010CN04187	A	20110107	IN 2010-CN4187	20100706
IN 289869	B	20171201		
US 20110006491	A1	20110113	US 2010-834162	20100712
US 8733142	B2	20140527		
US 8066829	B2	20111129	US 2011-13118077	20110527
US 20120064362	A1	20120315	US 2011-13301403	20111121
US 8440323	B2	20130514		
JP 2017159364	A	20170914	JP 2017-40554	20170303
JP 6588047	B2	20191009		

PRIORITY APPLN. INFO.:
 WO 2008-IB79 A 20080115
 CN 2009-80102269 A3 20090112

JP 2010-542705 A3 20090112
KR 2010-7017170 A3 20090112
WO 2009-IB322 W 20090112
US 2010-834162 A1 20100712

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a process for making a hot stamped coated steel sheet product. The methods comprises the steps of pre-coating a steel strip or sheet by aluminum or aluminum-iron-silicon alloy, cutting said pre-coated strip to obtain a pre-coated steel blank, heating the blank in a furnace preheated to a temp. and during a time defined by diagram according to thickness, at a heating rate Vc of 4-12°/s between 20 and 700° and at a heating rate Vc' of 1.5 and 6°/s between 500 and 700°, to obtain a heated blank. Further steps include transferring said heated blank to a die, hot stamping, cooling at a mean rate Vr of at least 30°/s between the exit of the heated blank from the furnace and down to 400°.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kefferstein Ronald	2001			US 20010042393 A1	
Lorraine Laminage	2000			EP 0971044 A	CAPLUS
Nissan Motor	2004			EP 1380666 A	CAPLUS
Usinor	2003			FR 2833504 A	CAPLUS

IT 1173986-65-6
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for manufg. stamped coated steel products)
RN 1173986-65-6 CAPLUS
CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, Cu 0-0.1, Ni 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Cu	0 - 0.1	7440-50-8
Ni	0 - 0.1	7440-02-0
P	0 - 0.1	7723-14-0

IPCI C21D0008-02 [I]; C22C0038-32 [I]; C22C0038-38 [I]; B21D0053-26 [I];
C23C0002-12 [I]
IPCR C21D0008-02 [I]; B21D0053-26 [I]; C22C0038-32 [I]; C22C0038-38 [I];
C23C0002-12 [I]
CC 55-11 (Ferrous Metals and Alloys)
ST steel aluminum coating hot stamping
IT Hot-dip coating process
(method for manufg. stamped coated steel products)
IT Metalworking
(stamping, hot; method for manufg. stamped coated steel products)
IT 1173986-67-8 1173986-72-5
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(interdiffusion layer; method for manufg. stamped coated steel products)
IT 1173986-68-9
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(intermediate and superficial layers; method for manufg. stamped coated steel products)
IT 1173986-74-7
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(intermediate layer; method for manufg. stamped

coated steel products)
IT 1173986-70-3 1173986-76-9
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(intermetallic layer; method for manufg. stamped
coated steel products)
IT 952598-91-3 1058743-89-7
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(main coating; method for manufg. stamped coated
steel products)
IT 1173986-65-6 1173986-66-7, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method for manufg. stamped coated steel products)
IT 1173986-77-0
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(superficial layer; method for manufg. stamped coated
steel products)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD
(6 CITINGS)

L13 ANSWER 67 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 2008:556603 CAPLUS Full-text
DOCUMENT NUMBER: 148:521251
TITLE: Coated steel strips, methods of making the same,
methods of using the same, stamping blanks prepared
from the same, stamped products prepared from the
same, and articles of manufacture which contain such a
stamped product
INVENTOR(S): Drillet, Pascal; Spehner, Dominique; Kefferstein,
Ronald
PATENT ASSIGNEE(S): Arcelor France, Fr.
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2008053273	A1	20080508	WO 2006-IB4019	20061030
CA 2668393	A1	20080508	CA 2006-2668393	20061030
CA 2668393	C	20130813		
EP 2086755	A1	20090812	EP 2006-842403	20061030
EP 2086755	B1	20171129		
KR 2009086970	A	20090814	KR 2009-7008891	20061030
KR 1327648	B1	20131112		
CN 101583486	A	20091118	CN 2006-80056246	20061030
CN 101583486	B	20140827		
JP 2010508438	T	20100318	JP 2009-533969	20061030
JP 5334854	B2	20131106		
RU 2395593	C1	20100727	RU 2009-114832	20061030
BR 2006022071	A2	20140527	BR 2006-22071	20061030
EP 3290199	A1	20180307	EP 2017-192410	20061030
EP 3290199	B1	20190821		
EP 3290200	A1	20180307	EP 2017-192418	20061030
EP 3587104	A1	20200101	EP 2019-185736	20061030
EP 3587105	A1	20200101	EP 2019-185743	20061030
ES 2754621	T3	20200420	ES 2017-192410	20061030
ZA 2009002611	A	20101027	ZA 2009-2611	20090416
MX 2009004453	A	20090511	MX 2009-4453	20090424
IN 2009CN02275	A	20100319	IN 2009-CN2275	20090424
IN 324293	B	20191108		
US 20110165436	A1	20110707	US 2011-447777	20110318
US 20130029172	A1	20130131	US 2012-13621015	20120915
US 9708683	B2	20170718		
US 20170260603	A1	20170914	US 2017-15606770	20170526
US 10550447	B2	20200204		
US 20190271055	A1	20190905	US 2019-16413774	20190516

US 10590507	B2	20200317		
US 20190271056	A1	20190905	US 2019-16413799	20190516
US 20190271057	A1	20190905	US 2019-16413825	20190516
US 20190271058	A1	20190905	US 2019-16414022	20190516
US 10597747	B2	20200324		
US 20190276912	A1	20190912	US 2019-16413729	20190516
US 10577674	B2	20200303		

PRIORITY APPLN. INFO.:

EP 2006-842403	A3	20061030
EP 2017-192410	A3	20061030
WO 2006-IB4019	W	20061030
US 2011-447777	A3	20110318
US 2012-13621015	A1	20120915
US 2017-15606770	A1	20170526

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Coated steel having a well defined and uniform thickness is useful and advantageous for prep. products by hot stamping. Products prep. by hot stamping such a steel are particularly advantageous when subjected to a subsequent spot welding step.

RETABLe

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Arcelor France	2006			WO 2006097593 A	CAPLUS
Armco Inc	1990			EP 0356783 A2	CAPLUS
Bhp Steel Jla Pty Ltd	2003			EP 1336666 A	CAPLUS
Laurent Jean-Pierre	2001			US 6296805 B1	CAPLUS
Lorraine Laminage	1995			FR 2720079 A1	CAPLUS
Lorraine Laminage	1998			FR 2758571 A1	CAPLUS
Lorraine Laminage	2000			EP 1013785 A1	CAPLUS

IT 1022915-01-0

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum coated steel strips stamping blanks and articles of manuf. which contain such a stamped product)

RN 1022915-01-0 CAPLUS

CN Iron alloy, base, Fe 94-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti 0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	94 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI B32B0015-00 [I]; C21D0009-46 [I]

IPCR B32B0015-00 [I]; C21D0009-46 [I]

CC 55-11 (Ferrous Metals and Alloys)

ST aluminum coated steel strip stamping article spot welding

IT Metalworking

(stamping; aluminum coated steel strips stamping blanks and articles of manuf. which contain such a stamped product)

IT 7429-90-5, Aluminum, uses 952598-91-3, Aluminum 87-90, iron 2-4, silicon 8-11

RL: NUU (Other use, unclassified); USES (Uses)

(aluminum coated steel strips stamping blanks and articles of manuf. which contain such a stamped product)

IT 1022915-01-0

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(aluminum coated steel strips stamping blanks and articles of manuf. which contain such a stamped product)

OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD
(7 CITINGS)

ACCESSION NUMBER: 2006:322586 CAPLUS Full-text
DOCUMENT NUMBER: 144:354988
TITLE: Oxidation-resistant units and oxidation-resistant coating materials for turbines
INVENTOR(S): Yasutomi, Yoshiyuki; Kitaoka, Satoshi; Matsudaira, Tsuneaki; Kawashima, Naoki; Wada, Masashi; Sugita, Yuji; Kagitani, Yukio; Nakajo, Koji
PATENT ASSIGNEE(S): Fine Ceramics Center, Japan; Chubu Electric Power Co., Inc.
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006089796	A	20060406	JP 2004-275373	20040922
JP 4542857	B2	20100915		

PRIORITY APPLN. INFO.: JP 2004-275373 20040922

AB The title unit is equipped with a structure body contg. an electron conducting region (R1) placed at oxidizing atm. side and an oxide layer placed at the oxidizing atm. side of R1, and a means for collecting neg. charge to R1. The region R1 may contain electron-conducting materials chosen from Ti, Ta, W, Ir, Pt-type alloys, heat-resistant ~~steel~~ contg. C 0-1, Si 0-3, Mn 0-2, Cr 0-30, Ni 0-50, Mo 0-10, W 0-8, Nb 0-5, Ti 0-5, Al 0-2, B 0-0.2, N 0-0.2, V 0-1, Cu 0-5, Zr 0-0.3 wt.%, Fe-based superalloys, Fe-Ni-Co-Cr alloys contg. C 0-0.5, Si 0-2, Mn 0-5, Cr 0-30, Ni 0-50, Co 0-50, Mo 0-10, W 0-8, Nb 0-5, Ti 0-5, Al 0-1, B 0-0.1, N 0-0.2, V 0-5, and Cu 0-5 wt.%, Co-based superalloys contg. C 0-1, Si 0-2, Mn 0-2, Ni 0-30, Cr 0-30, Mo 0-8, W 0-20, Nb 0-5, Ta 0-10, Ti 0-5, Al 0-0.5, Fe 0-5, B 0-0.5, Zr 0-2 wt.%, MCrAlR alloys (M = Ni, Co, and/or Fe; R = rare earth metals), TiC, TiN, TaC, TaN, LaCrO₃, and LaCoO₃. The unit provides high oxidn. resistance by ion blocking effects and elec. repulsion.

IT ~~881036-95-9~~ ~~881036-96-0~~ ~~881036-97-1~~
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; oxidn.-resistant units and coating materials
having oxide surface for turbines)

RN 881036-95-9 CAPLUS

CN Iron alloy, base, Fe 0-100, Ni 0-50, Cr 0-30, Mo 0-10, W 0-8, Cu 0-5, Nb 0-5, Ti 0-5, Si 0-3, Al 0-2, Mn 0-2, C 0-1, V 0-1, Zr 0-0.3, B 0-0.2, N 0-0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	0 - 100	7439-89-6
Ni	0 - 50	7440-02-0
Cr	0 - 30	7440-47-3
Mo	0 - 10	7439-98-7
W	0 - 8	7440-33-7
Cu	0 - 5	7440-50-8
Nb	0 - 5	7440-03-1
Ti	0 - 5	7440-32-6
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Mn	0 - 2	7439-96-5
C	0 - 1	7440-44-0
V	0 - 1	7440-62-2
Zr	0 - 0.3	7440-67-7
B	0 - 0.2	7440-42-8
N	0 - 0.2	17778-88-0

RN 881036-96-0 CAPLUS

CN Iron alloy, base, Fe 0-100, Co 0-50, Ni 0-50, Cr 0-30, Mo 0-10, W 0-8, Cu 0-5, Mn 0-5, Nb 0-5, Ti 0-5, V 0-5, Si 0-2, Al 0-1, C 0-0.5, N 0-0.2, B 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	0 - 100	7439-89-6
Ni	0 - 50	7440-02-0
Cr	0 - 30	7440-47-3
Mo	0 - 10	7439-98-7
W	0 - 8	7440-33-7
Cu	0 - 5	7440-50-8
Nb	0 - 5	7440-03-1
Ti	0 - 5	7440-32-6
Si	0 - 3	7440-21-3
Al	0 - 2	7429-90-5
Mn	0 - 2	7439-96-5
C	0 - 1	7440-44-0
V	0 - 1	7440-62-2
Zr	0 - 0.3	7440-67-7
B	0 - 0.2	7440-42-8
N	0 - 0.2	17778-88-0

Fe	0	-	100	7439-89-6
Co	0	-	50	7440-48-4
Ni	0	-	50	7440-02-0
Cr	0	-	30	7440-47-3
Mo	0	-	10	7439-98-7
W	0	-	8	7440-33-7
Cu	0	-	5	7440-50-8
Mn	0	-	5	7439-96-5
Nb	0	-	5	7440-03-1
Ti	0	-	5	7440-32-6
V	0	-	5	7440-62-2
Si	0	-	2	7440-21-3
Al	0	-	1	7429-90-5
C	0	-	0.5	7440-44-0
N	0	-	0.2	17778-88-0
B	0	-	0.1	7440-42-8

RN 881036-97-1 CAPLUS

CN Cobalt alloy, base, Co 0-100, Cr 0-30, Ni 0-30, W 0-20, Ta 0-10, Mo 0-8, Fe 0-5, Nb 0-5, Ti 0-5, Mn 0-2, Si 0-2, Zr 0-2, C 0-1, Al 0-0.5, B 0-0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Co	0 - 100	7440-48-4
Cr	0 - 30	7440-47-3
Ni	0 - 30	7440-02-0
W	0 - 20	7440-33-7
Ta	0 - 10	7440-25-7
Mo	0 - 8	7439-98-7
Fe	0 - 5	7439-89-6
Nb	0 - 5	7440-03-1
Ti	0 - 5	7440-32-6
Mn	0 - 2	7439-96-5
Si	0 - 2	7440-21-3
Zr	0 - 2	7440-67-7
C	0 - 1	7440-44-0
Al	0 - 0.5	7429-90-5
B	0 - 0.5	7440-42-8

IPCI C23C0030-00 [I]; C22C0019-05 [I]; C22C0019-07 [I]; C22C0038-00 [I];
C22C0038-58 [I]; C23F0013-00 [I]; F01D0005-28 [I]; F01D0025-00 [I];
F02C0007-00 [I]; C23C0030-00 [I]; C22C0019-05 [I]; C22C0019-07 [I];
C22C0038-00 [I]; C22C0038-58 [I]; C23F0013-00 [I]; F01D0005-28 [I];
F01D0025-00 [I]; F02C0007-00 [I]
IPCR C23C0030-00 [I]; C22C0019-05 [I]; C22C0019-07 [I]; C22C0038-00 [I];
C22C0038-58 [I]; C23F0013-00 [I]; F01D0005-28 [I]; F01D0025-00 [I];
F02C0007-00 [I]

CC 56-10 (Nonferrous Metals and Alloys)

Section cross-reference(s): 55, 57

ST oxidn resistant oxide coating superalloy turbine

IT Turbines

(oxidn.-resistant units and coating materials having oxide surface for turbines)

IT Coating materials

(oxidn.-resistant; oxidn.-resistant units and coating materials having oxide surface for turbines)

IT Superalloys

RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; oxidn.-resistant units and coating materials having oxide surface for turbines)

IT 7440-06-4, Platinum, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(neg. charge collector; oxidn.-resistant units and coating materials having oxide surface for turbines)

IT 1306-38-3, Ceria, uses 1309-48-4, Magnesia, uses 1314-20-1, Thorium oxide (ThO2), uses 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses 1314-61-0, Tantalum pentoxide 1344-28-1, Alumina, uses 12003-65-5, Aluminum lanthanum oxide (AlLaO3) 12004-39-6, Aluminum titanium oxide (Al2TiO5) 12055-23-1, Hafnia 13463-67-7, Titania, uses 97330-34-2, Beryllium oxide (BeO2)

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RL: TEM (Technical or engineered material use); USES (Uses)
(oxidn.-resistant units and coating materials having oxide
surface for turbines)
IT 7439-88-5, Iridium, uses 12016-86-3, Cobalt lanthanum oxide (CoLaO3)
12017-94-6, Chromium lanthanum oxide (CrLaO3) 12033-62-4, Tantalum
nitride (TaN) 12070-06-3, Tantalum carbide (TaC) 12070-08-5, Titanium
carbide (TiC) 25583-20-4, Titanium nitride (TiN) 73283-66-6, CoNiCrAlY
881036-95-9 881036-96-0 881036-97-1
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; oxidn.-resistant units and coating materials
having oxide surface for turbines)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

L13 ANSWER 69 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2006:31898 CAPLUS Full-text
DOCUMENT NUMBER: 144:132328
TITLE: Annular concentrically twisted bead cord
INVENTOR(S): Sasabe, Hiroshi; Wakahara, Hitoshi; Okamoto, Kenichi
PATENT ASSIGNEE(S): Sumitomo(Sei) Steel Wire Corp., Japan; Sumitomo
Electric Tohichi Co. Ltd.
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006004054	A1	20060112	WO 2005-JP12227	20050701
JP 2006062641	A	20060309	JP 2005-177763	20050617
JP 3779313	B2	20060524		
EP 1764238	A1	20070321	EP 2005-765284	20050701
EP 1764238	B1	20100414		
CN 101039811	A	20070919	CN 2005-80020724	20050701
CN 100572110	C	20091223		
EP 2213485	A1	20100804	EP 2009-13332	20050701
KR 2007043812	A	20070425	KR 2007-7002311	20070130
US 7735307	B2	20100615	US 2007-629490	20070712
PRIORITY APPLN. INFO.:			JP 2004-198329	A 20040705
			JP 2004-224303	A 20040730
			JP 2005-177631	A 20050617
			JP 2005-177763	A 20050617
			EP 2005-765284	A3 20050701
			WO 2005-JP12227	W 20050701

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB An annular concentrically twisted bead cord reduced in wt. and cost and improved in molding properties and annular core corrosive resistance. The annular core is formed of a medium carbon ~~steel~~ or an alloy ~~steel~~ obtained by suppressing carbon content and adding the proper amts. of specified elements thereto. The diam. (dc) of the annular core to the diam. (ds) of peripheral wires meets the requirement of the expression, $1.04 \leq dc/ds \leq 1.30$, and the peripheral wires with a coil diam. of 0.5 to 1.3 times the coil diam. of the annular core are used to provide the bead cord reduced in wt. and cost and improved in molding properties. Also, an Al-Zn alloy plating or a thick Zn plating layer is formed on the surface of the ~~steel~~ wire of the annular core or a stainless ~~steel~~ is used as the material of the annular core to increase the corrosive resistance of the annular core.

RETABLER

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Fuji Seiko Kabushiki Ka	1989			JP 01-273707 A	
Fuji Seiko Kabushiki Ka	1992			JP 04-266506 A	
Kanai, H	1987			Microfilm of the spe	
Kobe Steel Ltd	1996			JP 08-188851 A	CAPLUS
Nippon Steel Corp	2001			JP 2001164337 A	CAPLUS
Nippon Steel Corp	2003			JP 2003129178 A	CAPLUS
Sumitomo Rubber Industr	2001			JP 2001301430 A	
Tokyo Rope Manufacturin	1993			JP 05-163686 A	

Toyo Tire And Rubber Co	1974			GB 1466114 A	
Toyo Tire And Rubber Co	1974			FR 2221290 A	
Toyo Tire And Rubber Co	1974			DE 2405127 A	
Toyo Tire And Rubber Co	1974			JP 49-102002 A	
Toyo Tire And Rubber Co	1975			JP 50-131201 A	

IT 873188-74-0

RL: NUU (Other use, unclassified); USES (Uses)
(annular concentrically twisted bead cord)

RN 873188-74-0 CAPLUS

CN Iron alloy, base, Fe 93-99, Mn 0.5-2, Si 0.3-2, Cr 0.2-2, C 0.1-0.3, Al 0-0.1, B 0-0.1, Mg 0-0.1, Nb 0-0.1, Ti 0-0.1, V 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	93 - 99	7439-89-6
Mn	0.5 - 2	7439-96-5
Si	0.3 - 2	7440-21-3
Cr	0.2 - 2	7440-47-3
C	0.1 - 0.3	7440-44-0
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
Mg	0 - 0.1	7439-95-4
Nb	0 - 0.1	7440-03-1
Ti	0 - 0.1	7440-32-6
V	0 - 0.1	7440-62-2

IPCI B60C0015-04 [ICM,7]; B60C0009-00 [ICS,7]; C22C0038-00 [ICS,7]; C22C0038-18 [ICS,7]; C22C0038-54 [ICS,7]; D07B0001-06 [ICS,7]

CC 55-3 (Ferrous Metals and Alloys)

ST steel annular concentrically twisted bead cord aluminum zinc coating

IT Coating materials
Cords

(annular concentrically twisted bead cord)

IT 11107-04-3 11109-50-5 11121-90-7, Carbon steel, uses
12597-68-1, Stainless steel, uses 12597-69-2, Steel,
uses 12709-14-7, uses 12709-21-6, uses 37261-75-9, uses
39286-11-8, uses 873188-71-7, uses 873188-72-8, uses 873188-73-9,
uses 873188-74-0

RL: NUU (Other use, unclassified); USES (Uses)
(annular concentrically twisted bead cord)

IT 7440-66-6, Zinc, uses 11149-84-1

RL: NUU (Other use, unclassified); USES (Uses)
(coating; annular concentrically twisted bead cord)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD
(10 CITINGS)

L13 ANSWER 70 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2001:916938 CAPLUS Full-text

DOCUMENT NUMBER: 136:72669

TITLE: Acceleration of diffusion saturation processes in
nonisothermal thermochemical treatment

AUTHOR(S): Gyulikhandanov, E. L.; Khaidorov, A. D.

CORPORATE SOURCE: St. Petersburg State Technical University, St.
Petersburg, Russia

SOURCE: Metal Science and Heat Treatment (Translation of
Metallovedenie i Termicheskaya Obrabotka Metallov)
(2001), 43(5-6), 228-232

CODEN: MHTRAN; ISSN: 0026-0673

PUBLISHER: Kluwer Academic/Consultants Bureau

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Various of nonisothermal processes of carburizing, nitrocarburizing, and
nitriding were studied. The steels 20KhGNR, 40Kh, and 40KhMFA were
investigated. The diffusion satn. were performed by carburizing with an
additive of 5% NH3, high-temp. nitrocarburizing in a mixt. of 50% natural
gas and 50% NH3, and nitriding in NH3. In all the cases thermochem.
treatment (TCT) was not conducted by preliminary heat treatment. The
thickness of the diffusion layers and their structure and properties
were detd. The measurement of the diffusion layers involved in
low-temp. nitrocarburizing and nitriding was carried out by durometry.

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was assumed that the boundary between the layer and the core had a microhardness of 300 HV and exceeded somewhat the hardness of the core of the studied steels. The efficiency of nonisothermal and combined TCT multiplicity of the growth of the layer equal to the ratio of the effective thickness of the layers obtained in nonisothermal and isothermal regimes. Using combined regimes of thermochem. treatment that included thermocycling and isothermal stages, a substantial acceleration of the diffusion process was detected which increased considerably the thickness of the diffusion layer. A method was suggested that enabled to calc. the kinetics of nonisothermal processes of TCT according to the model of single-phase diffusion with the use of effective diffusivities.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Gyulikhandanov, E	1992		2	Metalloved Term Obra	
Shmykov, A	1991			Thermodynamics and K	

IT 37312-00-8, 20KhGNR

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(diffusion satn. processes in nonisothermal thermochem. treatment of steel)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST steel carburizing nitrocarburizing nitriding microstructure diffusion

IT Carbonitriding

Carburizing

Diffusion

Nitriding

(diffusion satn. processes in nonisothermal thermochem. treatment of steel)

IT Microstructure

(diffusion satn. processes in nonisothermal thermochem. treatment of steel in relation to)

IT 37312-00-8, 20KhGNR 39344-94-0, 40Kh, processes 64721-16-0, 40KhMFA

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(diffusion satn. processes in nonisothermal thermochem. treatment of steel)

IT 7664-41-7, Ammonia, uses

RL: NUU (Other use, unclassified); USES (Uses)

(diffusion satn. processes in nonisothermal thermochem. treatment of steel in relation to use of)

L13 ANSWER 71 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2000:113096 CAPLUS Full-text

DOCUMENT NUMBER: 132:230489

TITLE: Equipment for nitriding in pulsating current plasma ArcelorMittal Ex. 2001
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IPR2024-01377
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AUTHOR(S): Dostanko, A. P.; Bosyakov, M. N.; Bondarenko, S. V.;
 Grunskii, D. I.; Zhuk, D. V.; Kukharev, S. A.;
 Matusevich, P. A.; Savilov, A. V.
 CORPORATE SOURCE: Beloruss. Gos. Univ. Inform. i Radioelektron., Minsk,
 220027, Belarus
 SOURCE: Elektronnaya Obrabotka Materialov (1999), (3), 66-69
 CODEN: EOBFMA; ISSN: 0013-5739
 PUBLISHER: Institut Prikladnoi Fiziki AN Respubliki Moldova
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB The characteristics of the installation for hardening ion nitriding
 treatment in plasma of a pulsating current are adduced. The main
 advantages of processing in pulsating plasma with ref. to constructional
 and tool ~~steels~~ in comparison with gas nitriding are discussed. The
 summary table for different types of processed details., marks of
~~steels~~, and characteristics of nitriding ~~layer~~ - depth and surface
 hardness is adduced.

IT 12742-15-3, 20KhNR
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (equipment for nitriding in pulsating current plasma of ~~steels~~
 and ~~coating~~ properties)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====	=====+=====	=====
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 76-11 (Electric Phenomena)
 Section cross-reference(s): 55

ST equipment nitriding pulsating current plasma ~~steel~~

IT Apparatus
 Coating materials
 Hardness (mechanical)
 Plasma nitriding
 (equipment for nitriding in pulsating current plasma of ~~steels~~
 and ~~coating~~ properties)

IT 7440-37-1, Argon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (equipment for nitriding in pulsating current plasma of ~~steels~~
 and ~~coating~~ properties)

IT 1333-74-0, Hydrogen, processes 7727-37-9, Nitrogen, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (equipment for nitriding in pulsating current plasma of ~~steels~~
 and ~~coating~~ properties)

IT 12604-95-4, 38KhMYuA 12631-59-3, 40KhN2MA 12681-03-7, 20KhN3A
 12718-23-9, 18KhGT 12725-23-4, R6M5 12731-80-5, 38KhMA, properties
 12741-57-0, 4Kh5MFS 12741-70-7, Kh 12 12741-98-9, 25KhGT 12742-00-6,
 Kh12M 12742-05-1, 40KhN 12742-15-3, 20KhNR 12742-29-9,
 4Kh5V2FS 12773-74-9, 35KhGSA 12784-22-4, 12Kh2N4A 37203-00-2,
 4Kh4VMFS 37245-26-4, 30Kh13 37268-90-9, ~~Steel~~ 45, properties
 37311-99-2, 40KhGNM 37323-42-5, 30KhGT 37323-91-4, 5KhNM 37329-39-8,
 20Kh, properties 37329-44-5, R9K10 37360-28-4, 3Kh2V8 39344-94-0,
 40Kh, properties 50947-86-9, 40Kh9S2 54790-83-9, 55Kh20G9AN4
 61431-72-9, 15KhGN2TA 67540-49-2, 3Kh3M3F 68445-91-0, 20KhGNMTA

72026-34-7, 15KhF, properties 83653-82-1, 5KhNMF
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(equipment for nitriding in pulsating current plasma of steels
and coating properties)

L13 ANSWER 72 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 2000:34644 CAPLUS Full-text
DOCUMENT NUMBER: 132:96225
TITLE: Coated hot-rolled and cold-rolled steel sheet with
high strength and corrosion resistance after heat
treatment
INVENTOR(S): Laurent, Jean-Pierre; Devroc, Jacques; Hennechart,
Jean-Paul; Spehner, Dominique; Laminage, Lorraine
PATENT ASSIGNEE(S): Sollac, Fr.
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 971044	A1	20000112	EP 1999-401690	19990707
EP 971044	B1	20030514		
FR 2780984	A1	20000114	FR 1998-8793	19980709
FR 2780984	B1	20010622		
CA 2276911	A1	20000109	CA 1999-2276911	19990707
CA 2276911	C	20090505		
AT 240419	T	20030515	AT 1999-401690	19990707
PT 971044	E	20030829	PT 1999-401690	19990707
ES 2196740	T3	20031216	ES 1999-401690	19990707
BR 9902712	A	20000308	BR 1999-2712	19990708
JP 2000038640	A	20000208	JP 1999-195664	19990709
JP 3931251	B2	20070613		
US 6296805	B1	20011002	US 1999-350100	19990709
US 44153	E1	20130416	US 2011-13205126	20110808
US 44940	E1	20140610	US 2013-13863100	20130415
PRIORITY APPLN. INFO.:			FR 1998-8793	A 19980709
			US 1999-350100	E 19990709
			US 2011-13205126	A1 20110808

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A hot-rolled and cold-rolled steel sheet contg. C 0.15-0.5, Mn 0.5-3, Si
0.1-0.5, Cr 0.01-1, Ti $\leq$ 0.2, Al $\leq$ 0.1, P $\leq$ 0.1, S
 $\leq$ 0.05, and B 0.0005-0.08% is coated in a molten Al bath, heated
at 5-600°/s, and annealed above 750°. The coated sheet
has a high strength, shock-, fatigue-, abrasion-, wear-, and corrosion
resistance, and adhesion to paints and adhesives.

RETABLe

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1989			JP 01176056 A	CAPLUS
Anon	1989			FR 2625227 A	CAPLUS
Anon	1990			JP 02263954 A	CAPLUS
Anon	1993			JP 05247588 A	CAPLUS
Anon	1993			GB 2261879 A	CAPLUS
Anon	1993			FR 2684392 A	CAPLUS
Anon	1993			DE 4143270 A	CAPLUS
Anon	1993			US 5178688 A	CAPLUS
Anon	1994			JP 06179944 A	CAPLUS
Anon	1994			JP 6093375 A	
Anon	1994			KR 9402139 B	
Anon	1995			IT 1252862 B	
Anon	1995			JP 7062212 B	
Anon	1996			JP 2034275 C	
Anon	1997			JP 2686755 B	

IT 254455-64-6

RL: TEM (Technical or engineered material use); USES (Uses)
(aluminum-coated hot-rolled and cold-rolled steel
sheet with high strength and corrosion resistance)

RN 254455-64-6 CAPLUS
CN Iron alloy, base, Fe 95-99, Mn 0.5-3, Cr 0-1, C 0.2-0.5, Si 0.1-0.5, Ti
0-0.2, Al 0-0.1, B 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 99	7439-89-6
Mn	0.5 - 3	7439-96-5
Cr	0 - 1	7440-47-3
C	0.2 - 0.5	7440-44-0
Si	0.1 - 0.5	7440-21-3
Ti	0 - 0.2	7440-32-6
Al	0 - 0.1	7429-90-5
B	0 - 0.1	7440-42-8
P	0 - 0.1	7723-14-0

IPCI C22C0038-32 [ICM,6]
IPCR C23C0002-12 [I]; C21D0008-02 [I]; C22C0038-00 [I]; C22C0038-32 [I];
C22C0038-38 [I]; C23C0002-28 [I]; C23C0030-00 [I]
CC 55-3 (Ferrous Metals and Alloys)
ST aluminum coated steel sheet
IT Coating process
(hot-dipping; of hot-rolled and cold-rolled steel sheet with
aluminum alloy)
IT 110107-84-1, uses 254455-64-6
RL: TEM (Technical or engineered material use); USES (Uses)
(aluminum-coated hot-rolled and cold-rolled steel
sheet with high strength and corrosion resistance)
IT 37296-00-7 254455-65-7
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(coating of hot-rolled and cold-rolled steel sheet
with)
OS.CITING REF COUNT: 16 THERE ARE 16 CAPLUS RECORDS THAT CITE THIS
RECORD (19 CITINGS)

L13 ANSWER 73 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1999:474181 CAPLUS Full-text
DOCUMENT NUMBER: 131:274752
TITLE: Effect of electrode drying conditions and preheating
temperature on cold cracking in welded joints of
low-alloy high-resistance coated-electrode
electric-arc steels
AUTHOR(S): da Silva, Paulo Guedes; Maciel, Theophilo Moura
CORPORATE SOURCE: Centro de Ciencias e Tecnologia, Universidade Federal
da Paraiba - UFPB, Brazil
SOURCE: Congresso Anual - Associacao Brasileira de Metalurgia
e Materiais (1998), Volume Date 1997, 52nd(II
Congresso Internacional de Tecnologia Metalurgica e de
Materiais), 4358-4368
CODEN: CAAMEU
PUBLISHER: Associacao Brasileira de Metalurgia e Materiais
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: Portuguese
AB The effects of the electrode moisture level and of the cooling rate on the
cold cracking of welded joints of HSLA steels was evaluated. The
shielded metal arc Welding process was employed. The weld deposits were
made with AWS E 12018-G electrode, using the SAR 120 T (ASTM 514 B) as
steel base metal. The cooling rate was varied by varying the
pre-heating temp. and the moisture level was varied by varying the
electrode redried time. The results obtained indicated a significative
redn. on the cracks with the increase of the pre-heating temp. and with
the increases of the redried times, without signification changes at the
weld metal microstructure and hardness. The absence of cracks was found
for welds deposited with pre-heating above 180 °C and with
electrodes redried for 2 h at 240 °C.
IT 52346-86-8, ASTM A514B, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(effect of electrode drying conditions and preheating temp. on cold
cracking in welded joints of low-alloy steel using

high-resistance coated-electrode elec.-arc welding fillers)
RN 52346-86-8 CAPLUS
CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
Fe	97	- 98	7439-89-6
Mn	0.70	- 1.00	7439-96-5
Cr	0.40	- 0.65	7440-47-3
Si	0.20	- 0.35	7440-21-3
Mo	0.15	- 0.25	7439-98-7
C	0.12	- 0.21	7440-44-0
V	0.03	- 0.08	7440-62-2
S	0	- 0.04	7704-34-9
P	0	- 0.035	7723-14-0
Ti	0.01	- 0.03	7440-32-6
B	0.0005	- 0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)
ST ~~steel~~ weld cracking electrode drying preheating
IT Drying Humidity
(effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)
IT Welding of metals
(electrodes; effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)
IT Welding of metals
(shielded metal arc; effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)
IT ~~52346-86-8~~, ASTM A514B, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)
IT 12597-69-2, ~~Steel~~, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(welded; effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)
IT 154804-42-9, AWS E12018G
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(welding electrode; effect of electrode drying conditions and preheating temp. on cold cracking in welded joints of low-alloy ~~steel~~ using high-resistance coated-electrode elec.-arc welding fillers)

L13 ANSWER 74 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1997:607427 CAPLUS Full-text
DOCUMENT NUMBER: 127:296559
ORIGINAL REFERENCE NO.: 127:57923a,57926a
TITLE: Nondestructive testing of carburizing
AUTHOR(S): Bochenin, V. I.; Burnakov, K. K.
CORPORATE SOURCE: Kurgan. Gos. S-kh. Akad. im. Mal'tseva, Kurgan, Russia
SOURCE: Vestnik Mashinostroeniya (1997), (3), 31-33
CODEN: VMASAV; ISSN: 0042-4633
PUBLISHER: Mashinostroenie
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB A nondestructive testing technique is developed for the detn. of the depth of a carburized layer. It consists in γ -quantum narrow-beam examn. of a controlled medium material and detn. of the degree of photon absorption in different layers of the product surface, the C amt. being

detected based on the γ -phase content. The results of exptl. testing conducted on three different ~~steels~~ showed a little discrepancy between the new technique and conventionally used chem. anal.

IT 37312-00-8, 20KhGMR
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(nondestructive testing of carburized ~~layer~~ depth in ~~steel~~ carburizing)
RN 37312-00-8 CAPLUS
CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
Section cross-reference(s): 79
ST ~~steel~~ carburization carbon distribution nondestructive testing
IT Carburizing
(nondestructive testing of carburized ~~layer~~ depth in ~~steel~~ carburizing)
IT Testing of materials
(nondestructive; nondestructive testing of carburized ~~layer~~ depth in ~~steel~~ carburizing)
IT 12742-08-4, 20Kh2N4A 12742-21-1, 18Kh2N4VA 37312-00-8, 20KhGMR
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(nondestructive testing of carburized ~~layer~~ depth in ~~steel~~ carburizing)

L13 ANSWER 75 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1991:147833 CAPLUS Full-text
DOCUMENT NUMBER: 114:147833
ORIGINAL REFERENCE NO.: 114:24995a, 24998a
TITLE: Development of technology for electrospark hardening of ~~steel~~ steam turbine parts
AUTHOR(S): Skoblo, T. S.; Sidenko, V. N.; Tripolko, V. K.; Rudyuk, A. S.
CORPORATE SOURCE: USSR
SOURCE: Tyazheloe Mashinostroenie (1990), (7), 25-6
CODEN: TYMAEZ; ISSN: 1024-7106
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB The valves of steam turbine distributor made from 20Kh1M1F1TR were hardened by electrospark treatment using electrodes from 40Kh13, 1Kh18N10T, and KhN77TYuR. The max. increase of wear resistance was obtained for 1Kh18N10T electrode: the wear resistance increases 1.8-fold compared with that of nitrided parts. After holding in air at 540° for 1000 h, no corrosion was obsd. at the hardened surface; the hardness and depth of the ~~layer~~ were unaffected by the holding.
IT 37311-91-4, 20Kh1M1F1TR
RL: USES (Uses)
(steam turbine parts from, electrospark hardening of)
RN 37311-91-4 CAPLUS

CN Iron alloy, base, Fe 95-98,Cr 0.90-1.40,Mo 0.80-1.10,V 0.70-1.00,Mn 0-0.50,Si 0-0.37,Cu 0-0.30,Ni 0-0.30,C 0.17-0.24,Ti 0.05-0.12,P 0-0.030,S 0-0.030,B 0.005 (20Kh1M1F1TR) (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Cr	0.90 - 1.40	7440-47-3
Mo	0.80 - 1.10	7439-98-7
V	0.70 - 1.00	7440-62-2
Mn	0 - 0.50	7439-96-5
Si	0 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
C	0.17 - 0.24	7440-44-0
Ti	0.05 - 0.12	7440-32-6
P	0 - 0.030	7723-14-0
S	0 - 0.030	7704-34-9
B	0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)
Section cross-reference(s): 47
ST electrospark hardening ~~steel~~ steam turbine; electrode electrospark hardening ~~steel~~ turbine
IT Electric spark
(hardening by, of high-temp. ~~steel~~ parts for steam turbines)
IT Turbines
(steam, parts, from pearlitic high-temp. ~~steel~~, electrospark hardening of, electrodes for)
IT 12719-18-5, KhN77TYuR 39412-98-1, 40Kh13 54611-20-0, 1Kh18N10T
RL: USES (Uses)
(electrode, for electrospark hardening of steam turbine parts from pearlitic high-temp. ~~steel~~)
IT 37311-91-4, 20Kh1M1F1TR
RL: USES (Uses)
(steam turbine parts from, electrospark hardening of)

L13 ANSWER 76 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1990:518966 CAPLUS Full-text

DOCUMENT NUMBER: 113:118966

ORIGINAL REFERENCE NO.: 113:20121a,20124a

TITLE: Role of thermally hardened ~~layers~~ obtained by laser treatment in the wear resistance of contact pairs during fretting corrosion

AUTHOR(S): Dorozhkin, N. N.; Dubnyakov, V. N.; Kukin, S. F.; Pasakh, E. V.

CORPORATE SOURCE: PO Minsk. Trakt. Zavod, Minsk, USSR

SOURCE: Trenie i Iznos (1990), 11(2), 264-9

CODEN: TRIZD6; ISSN: 0202-4977

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Fretting corrosion tests of ~~steel~~ 20KhNP and cast iron SCh20 after laser hardening showed that the wear intensity of the metastable surface structure of the ~~steel~~ is 1/5th and that of the gray iron is 1/3rd of the values obtained for nonhardened materials. Surface deformation during the frictional interaction facilitates phase transformation in the metastable structure ensuring an increase in ductility at high values of hardness, which results in an increase in the wear resistance of the laser-hardened ~~steel~~ and cast iron during fretting corrosion.

IT 12742-15-3
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(laser hardening of, fretting corrosion in relation to)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98,Ni 0.80-1.10,Cr 0.70-1.10,Mn 0.60-0.90,Si 0.17-0.37,Cu 0-0.30,C 0.16-0.23,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Fe	95	-	98	7439-89-6
Ni	0.80	-	1.10	7440-02-0
Cr	0.70	-	1.10	7440-47-3
Mn	0.60	-	0.90	7439-96-5
Si	0.17	-	0.37	7440-21-3
Cu	0	-	0.30	7440-50-8
C	0.16	-	0.23	7440-44-0
W	0	-	0.20	7440-33-7
Mo	0	-	0.15	7439-98-7
V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

CC 55-10 (Ferrous Metals and Alloys)
 ST laser hardening ~~steel~~ fretting corrosion; cast iron laser hardening corrosion
 IT 12742-15-3 72645-39-7, Sch20
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (laser hardening of, fretting corrosion in relation to)

L13 ANSWER 77 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1987:71034 CAPLUS Full-text
 DOCUMENT NUMBER: 106:71034
 ORIGINAL REFERENCE NO.: 106:11649a,11652a
 TITLE: A nondestructive measurement of residual bulk stresses in welded ~~steel~~ specimens by use of magnetically induced velocity changes for ultrasonic waves
 AUTHOR(S): Kwun, Hegeon
 CORPORATE SOURCE: Nondestr. Eval. Sci. Technol. Div., Southwest Res. Inst., San Antonio, TX, USA
 SOURCE: Materials Evaluation (1986), 44(13), 1560-6
 CODEN: MAEVAD; ISSN: 0025-5327
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The distributions of residual bulk stresses in butt-welded ASTM A-588 [63849-06-9] ~~steel~~ and a T-shaped full-penetration-welded ASTM A514 [63747-69-3] ~~steel~~ were nondestructively measured by use of magnetically induced velocity changes (MIVC) for longitudinal and shear waves. The stress effects on MIVC obsd. under various uniaxial stress conditions were used to det. the residual bulk stresses. The results agree with stress values detd. by a layer-removal technique. The MIVC method may be developed to measure biaxial and triaxial stress states.
 IT 52346-86-8, properties
 RL: PRP (Properties)
 (residual stresses in welded, detn. by magnetically induced velocity changes for ultrasonic waves)
 RN 52346-86-8 CAPLUS
 CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====	=====+=====	=====
Fe	97 - 98	7439-89-6
Mn	0.70 - 1.00	7439-96-5
Cr	0.40 - 0.65	7440-47-3
Si	0.20 - 0.35	7440-21-3
Mo	0.15 - 0.25	7439-98-7
C	0.12 - 0.21	7440-44-0
V	0.03 - 0.08	7440-62-2
S	0 - 0.04	7704-34-9
P	0 - 0.035	7723-14-0
Ti	0.01 - 0.03	7440-32-6
B	0.0005 - 0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)
 IT Welds
 (~~steel~~, residual bulk stresses in, detn. by magnetically induced velocity changes for ultrasonic waves)
 IT 52346-86-8, properties 61299-90-9, properties

RL: PRP (Properties)
(residual stresses in welded, detn. by magnetically induced velocity
changes for ultrasonic waves)
IT 12597-69-2
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(welds, ~~steel~~, residual bulk stresses in, detn. by
magnetically induced velocity changes for ultrasonic waves)

L13 ANSWER 78 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1986:190490 CAPLUS Full-text
DOCUMENT NUMBER: 104:190490
ORIGINAL REFERENCE NO.: 104:30111a,30114a
TITLE: Structure and properties of a boronized layer of
carbon and low-alloy ~~steels~~ from high-frequency
current heating
AUTHOR(S): Zozulya, V. F.; Pavlyuchenko, A. A.; Legeida, V. N.
CORPORATE SOURCE: USSR
SOURCE: Vestn. Khar'k. Politekhn. In-ta (1985), (255), 42-4
From: Ref. Zh., Metall. 1986, Abstr. No. 2E285
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Title only translated.
IT 37311-91-4
RL: PRP (Properties)
(structure of boronized layer in, high-frequency heating in
relation to)
RN 37311-91-4 CAPLUS
CN Iron alloy, base, Fe 95-98,Cr 0.90-1.40,Mo 0.80-1.10,V 0.70-1.00,Mn
0-0.50,Si 0-0.37,Cu 0-0.30,Ni 0-0.30,C 0.17-0.24,Ti 0.05-0.12,P 0-0.030,S
0-0.030,B 0.005 (20Kh1M1F1TR) (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Cr	0.90 - 1.40	7440-47-3
Mo	0.80 - 1.10	7439-98-7
V	0.70 - 1.00	7440-62-2
Mn	0 - 0.50	7439-96-5
Si	0 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
C	0.17 - 0.24	7440-44-0
Ti	0.05 - 0.12	7440-32-6
P	0 - 0.030	7723-14-0
S	0 - 0.030	7704-34-9
B	0.005	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
ST ~~steel~~ boronized layer structure; heating high frequency boronizing steel
IT Boronizing
(of ~~steel~~, carbon- and low-alloy, high-frequency heating
effect on diffusion layer structure in)
IT 12651-65-9, properties 12725-36-9, properties 37311-91-4
RL: PRP (Properties)
(structure of boronized layer in, high-frequency heating in
relation to)

L13 ANSWER 79 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1986:113747 CAPLUS Full-text
DOCUMENT NUMBER: 104:113747
ORIGINAL REFERENCE NO.: 104:17971a,17974a
TITLE: Cavitation-resistant diffusion layers on low-alloy
~~steels~~
AUTHOR(S): Abacharaev, M. M.
CORPORATE SOURCE: Dagest. Politekh. Inst., Makhachkala, USSR
SOURCE: Zashchitnye Pokrytiya na Metallakh (1985), 19, 15-18
CODEN: ZPMEAC; ISSN: 0514-5864
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB A new criterion was developed for evaluation of the cavitation resistance of diffusion-coated low-alloy steels. The criterion was used in detn. of the cavitation resistance of quenched, Ti- and Mn-cemented, chromized, or chromized and cemented steels 20KhNR [12742-15-3], 40KhN [12742-05-1], and 38Kh2MYuA [12604-95-4]. The exptl. study and an anal. evaluation of steel cavitation resistance showed good coincidence using the criterion. The highest range of cavitation resistance was recorded for Cr + Mn-satd. steel 40KhN, Cr + Ti-satd. steel 20KhNR, and chromized steel 38Kh2MYuA.

IT 12742-15-3
RL: USES (Uses)
(cavitation-resistance of diffusion-satd., criterion for evaluation of)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST steel diffusion coating cavitation resistance; criterion steel cavitation resistance evaluation; chromizing steel cavitation resistance; manganese cementation steel cavitation resistance; titanium cementation steel cavitation resistance

IT Chromizing
(of low-alloy steel, cavitation resistance by, criterion for evaluation of)

IT Cavitation
(resistance of low-alloy diffusion-satd. steel to, criterion for evaluation of)

IT 12604-95-4 12742-05-1 12742-15-3
RL: USES (Uses)
(cavitation-resistance of diffusion-satd., criterion for evaluation of)

IT 7439-96-5, reactions 7440-32-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cementation of low-alloyed steels with, cavitation resistance by, criterion for evaluation of)

L13 ANSWER 80 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1985:581691 CAPLUS Full-text

DOCUMENT NUMBER: 103:181691

ORIGINAL REFERENCE NO.: 103:29223a,29226a

TITLE: Study of a dark constituent in carbonitridation layers

AUTHOR(S): Shapochkin, V. I.; Semenova, L. M.

CORPORATE SOURCE: VPO "VNIITMASH", Volgograd, USSR

SOURCE: Izvestiya Vysshikh Uchebnykh Zavedenii, Chernaya Metallurgiya (1985), (5), 125-9
CODEN: IVUMAX; ISSN: 0368-0797

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Low-alloy steels such as 20Kh [37329-39-8], 40Kh [39344-94-0], 25KhGT [12741-98-9], 25KhGM [51433-85-3], etc., were carbonitrided to 0.9-1.1% C and 0.4-0.5% N content in a 0.05 mm-deep layer. A dark constituent of the carbonitrided layer was studied by metallog., electron microscopy, and physicochem. anal. Pptn. of irregular-shaped inclusions surrounded by

an easily etched zone, which usually crumbles during specimen prepn., was related to formation of the dark constituent.

IT 12742-15-3 37312-00-8 56995-50-7,

reactions

RL: USES (Uses)

(carbonitriding of, defect structure formation in)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98,Ni 0.80-1.10,Cr 0.70-1.10,Mn 0.60-0.90,Si 0.17-0.37,Cu 0-0.30,C 0.16-0.23,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97,Ni 0.80-1.10,Cr 0.70-1.10,Mn 0.70-1.00,Si 0.17-0.37,Cu 0-0.30,C 0.16-0.23,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

RN 56995-50-7 CAPLUS

CN Iron alloy, base, Fe 96-98,Cr 0.75-1.05,Mn 0.70-1.00,Si 0.17-0.37,Cu 0-0.30,Ni 0-0.30,C 0.18-0.24,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhGR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	96 - 98	7439-89-6
Cr	0.75 - 1.05	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
C	0.18 - 0.24	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9

Ti 0 - 0.03 7440-32-6
 B 0.001 7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
 ST ~~steel~~ carbonitriding defect structure ppt
 IT Carbonitridation and Cyanidation
 (of low-alloy ~~steels~~, defect structure formation in)
 IT 12681-03-7 12741-98-9, reactions 12742-08-4 12742-15-3
 37312-00-8 37329-39-8, reactions 39344-94-0, reactions
 51433-85-3, reactions 56995-50-7, reactions 66772-46-1
 92049-05-3
 RL: USES (Uses)
 (carbonitriding of, defect structure formation in)

L13 ANSWER 81 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1984:495400 CAPLUS Full-text
 DOCUMENT NUMBER: 101:95400
 ORIGINAL REFERENCE NO.: 101:14571a,14574a
 TITLE: Thermochemical treatment of ~~steel~~ parts in
 continuous furnaces with automatic control of carbon
 potential
 AUTHOR(S): Kirnos, I. V.; Klyshnikov, S. T.; Kukui, B. G.;
 Lobachev, I. A.; Pegisheva, S. A.; Radzievskii, B. V.
 CORPORATE SOURCE: VNIITMASH, USSR
 SOURCE: Metallovedenie i Termicheskaya Obrabotka Metallov
 (1984), (4), 24-8
 CODEN: MTOMAX; ISSN: 0026-0819
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB A continuous furnace for ~~steel~~ carburization was developed. A math.
 model was used for automatic control of the carburization process by
 monitoring the C potential and moisture content of the furnace atm. Tests
 were made on ~~steels~~ 20KhNR [12742-15-3] and 25KhGT [12741-98-9].
 Good agreement of calcd. and exptl. data for C distribution in the
 hardened layers, related to process parameters, was obtained.

IT 12742-15-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, in continuous furnace, control of, model for)

RN 12742-15-3 CAPLUS
 CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
 ST ~~steel~~ carburization continuous furnace control; model ~~steel~~
 carburization furnace control
 IT Furnaces
 (continuous, for ~~steel~~ carburization, control of, model for)
 IT Controlled atmospheres
 (in continuous furnace for ~~steel~~ carburization)
 IT Process simulation, physicochemical
 (of carburization of ~~steel~~ in continuous process)
 IT Carburizing

(of steel, in continuous furnace, control of, model for)
IT 12741-98-9, reactions 12742-15-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(carburization of, in continuous furnace, control of, model for)

L13 ANSWER 82 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1984:495398 CAPLUS Full-text
DOCUMENT NUMBER: 101:95398
ORIGINAL REFERENCE NO.: 101:14570h,14571a
TITLE: Thermocyclic carbonitridation of gears
AUTHOR(S): Bashnin, Yu. A.; Semenova, L. M.; Burenkova, O. S.;
Borodova, I. A.; Ban'kovskii, A. I.
CORPORATE SOURCE: VNIITMASH, USSR
SOURCE: Metallovedenie i Termicheskaya Obrabotka Metallov
(1984), (4), 14-15, 1 plate
CODEN: MTOMAX; ISSN: 0026-0819
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Tractor gears were made from steels 25KhGT [12741-98-9] and 20KhGMR
[37312-00-8], and carbonitrided in a furnace with endothermic atm. using
thermocycling (heating to 880° and cooling in controlled amt.).
The effect of the thermocycling on contact-fatigue strength of hardened
gears was studied in comparison with conventional thermochem. treatments
(isothermal carbonitridation or carburization). It was found that
thermocycle-treated steels had the same amt. of C and N in hardened
layers, but had lower amt. of residual austenite, smaller martensite
needles, and finer carbonitride particles. Durability of
thermocycle-treated gears was 2.5 times that of conventionally treated
ones.
IT 37312-00-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbonitridation of, for tractor wear, thermocycling in, structure and
mech. properties and wear resistance in relation to)
RN 37312-00-8 CAPLUS
CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
IT Carbonitridation and Cyanidation
(of steel, for tractor gears, thermocycling in, structure and
mech. properties and wear resistance in relation to)
IT Tractors
(steel parts for, carbonitridation of, thermocycling in,
structure and mech. properties and wear resistance in relation to)
IT Gears
(steel, for tractors, carbonitridation of, thermocycling in,
structure and mech. properties and wear resistance in relation to)
IT 12741-98-9, reactions 37312-00-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbonitridation of, for tractor wear, thermocycling in, structure and
mech. properties and wear resistance in relation to)

L13 ANSWER 83 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1983:526476 CAPLUS Full-text
DOCUMENT NUMBER: 99:126476
ORIGINAL REFERENCE NO.: 99:19427a,19430a
TITLE: Types of bainite in carburized layers of gears,
hardness and effective thickness of layers
containing bainite
AUTHOR(S): Susin, A. A.; Aleksandrov, B. I.; Val'ko, A. I.
CORPORATE SOURCE: USSR
SOURCE: Poverkh. Metody Uprochneniya Met. i Splavov v
Mashinostr. Materialy Seminara, M. (1983) 32-6
From: Ref. Zh., Metall. 1983, Abstr. No. 8I1029
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Title only translated.

IT 12742-15-3

RL: USES (Uses)

(case carburization of gear, bainite morphol. in)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST carburizing gear steel bainite

IT Carburizing

(of steel gears, for case hardening, bainite morphol. in)

IT Gears

(steel, case carburization of, bainite morphol. in)

IT 12742-15-3

RL: USES (Uses)

(case carburization of gear, bainite morphol. in)

IT 12427-23-5

RL: PRP (Properties)

(morphol. of, in case-carburized steel gears)

L13 ANSWER 84 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1983:408990 CAPLUS Full-text
DOCUMENT NUMBER: 99:8990
ORIGINAL REFERENCE NO.: 99:1493a,1496a
TITLE: Ion nitriding behavior of several low alloy steels
AUTHOR(S): Robino, C. V.; Inal, O. T.
CORPORATE SOURCE: Dep. Metall. Mater. Eng., New Mexico Inst. Min.
Technol., Socorro, NM, 87801, USA
SOURCE: Materials Science and Engineering (1983), 59(1), 79-90
CODEN: MSCEAA; ISSN: 0025-5416
DIGITAL OBJECT ID: 10.1016/0025-5416(83)90090-3
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The ion nitriding of several low-alloy steels, U.S. Steel T1 type A
[52346-86-8], AISI 4140 [12672-16-1], AISI 6150 [39370-53-1], and
Nitralloy 135M [61333-12-8], was examd. under varying process conditions

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using microhardness-depth correlations, friction and wear measurements, and optical and transmission electron microscopy. The process variables included time (2-4 h) and temp. (400-600°). All 4 steels exhibited a diffusion layer case growth rate which was dependent on the square root of the exposure time. The highest nitrided hardnesses and lowest case depths were obsd. in the Nitralloy 135M steel while the lowest hardnesses and highest case depths in the T1 steel. The behaviors of the T1, AISI 4140, and 6150 steels were similar. The white layer thickness was independent of the material and increased with increasing time. Both the case depth and the white layer thickness increased strongly with temp. while the hardness decreased. Only slight differences arise in the bulk structure during nitriding. Nitriding produces platelet or disk ppts. approx. 5-20 nm across on {001} matrix planes. These platelets show a striated morphol. which is the result of strain within the matrix. Electron microscopy showed tempering to continue in the core region during nitriding. The wear resistance of the steels increased by factors of 3.7-8.5 by nitriding. The coeff. of friction increased in the nitrided samples.

IT 52346-86-8, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (ion nitridation of)
 RN 52346-86-8 CAPLUS
 CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	0.70 - 1.00	7439-96-5
Cr	0.40 - 0.65	7440-47-3
Si	0.20 - 0.35	7440-21-3
Mo	0.15 - 0.25	7439-98-7
C	0.12 - 0.21	7440-44-0
V	0.03 - 0.08	7440-62-2
S	0 - 0.04	7704-34-9
P	0 - 0.035	7723-14-0
Ti	0.01 - 0.03	7440-32-6
B	0.0005 - 0.005	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)
 ST nitriding ion steel wear
 IT Plasma nitriding
 (of steels, low-alloy)
 IT 12672-16-1, reactions 39370-53-1, reactions 52346-86-8,
 reactions 61333-12-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (ion nitridation of)

OS.CITING REF COUNT: 27 THERE ARE 27 CAPLUS RECORDS THAT CITE THIS
 RECORD (27 CITINGS)

L13 ANSWER 85 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1982:601438 CAPLUS Full-text

DOCUMENT NUMBER: 97:201438

ORIGINAL REFERENCE NO.: 97:33693a,33696a

TITLE: The use of controlled 20 and 40% hydrogen atmospheres
 in cementation and carbonitridation

AUTHOR(S): Tikhonov, A. K.; Sheindlin, B. E.; Chaikovskii, S. Z.;
 Krishtal, M. A.

CORPORATE SOURCE: Volgogr. Alum. Zavod, Volgograd, USSR

SOURCE: Metallovedenie i Termicheskaya Obrabotka Metallov
 (1982), (6), 30-3
 CODEN: MTOMAX; ISSN: 0026-0819

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The effect of H concn. in controlled furnace atms. contg. 20 and 40% H on
 mech. properties and the rate of satn. of samples of Armco Fe and
 case-hardenable (18KhGT [12718-23-9], 30KhGT [37323-42-5], 20Kh3NA
 [12681-03-7], 20KhGNR [37312-00-8], and 19KhGN [37311-96-9]) and
 structural (45Kh [60999-09-9] and ShKh15 [12725-40-5]) steels and
 automobile parts of steel 16KhG [54342-41-5] during carburizing and
 carbonitriding was studied by reducing the atms. to a common C potential

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and maintaining the latter through the entire expt. The thickness of the layer during carburizing of autoparts in the atms. with 20 and 40% H was 1.4 and 1.6 mm, resp., and in carburizing of steel samples 1.3 and 1.4 mm, resp. The impact toughness, strength, and breaking force during static bending test were higher in the 20% H atm. In carbonitridation, C content in the 20% H atm. was 0.1% higher than that at 40% H, and the rate of part satn. was practically the same. In the atm. with 20% H, heat losses through the furnace brickwork decreased by 25%.

IT 37312-00-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization and carbonitridation of case-hardenable, hydrogen in furnace controlled atms. for, mech. properties and satn. rate in relation to)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-7 (Ferrous Metals and Alloys)

ST steel carburizing atm hydrogen; carbonitridation atm hydrogen steel; Armco iron carbonitridation carburizing hydrogen

IT Controlled atmospheres
 (endothermic, for carburization and carbonitridation of Armco iron and steels, hydrogen in, mech. properties and satn. rate in relation to)

IT Controlled atmospheres
 (exothermic, for carburization and carbonitridation of Armco iron and steels, hydrogen in, mech. properties and satn. rate in relation to)

IT Carbonitridation and Cyanidation
 Carburizing
 (gas, of Armco iron and steels, hydrogen-contg. controlled atms. for, mech. properties and satn. rate in relation to)

IT 37311-96-9, reactions 37312-00-8 37323-42-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization and carbonitridation of case-hardenable, hydrogen in furnace controlled atms. for, mech. properties and satn. rate in relation to)

IT 1333-74-0, uses and miscellaneous
 RL: USES (Uses)
 (in carburization and carbonitridation atm. for Armco iron and case-hardenable and structural steels)

L13 ANSWER 86 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1981:195784 CAPLUS Full-text

DOCUMENT NUMBER: 94:195784

ORIGINAL REFERENCE NO.: 94:32003a,32006a

TITLE: Prediction of the effective thickness of a case-hardened layer

AUTHOR(S): Gliner, R. E.; Kharkevich, N. I.

CORPORATE SOURCE: Gor'k. Avto. Zavod, Gorkiy, USSR

SOURCE: Avtomobil'naya Promyshlennost (1981), 46(1), 26-8

CODEN: AVPRA3; ISSN: 0005-2337

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DOCUMENT TYPE: Journal
 LANGUAGE: Russian
 AB The carburization of hollow cylinders with wall thickness of 20 mm for ~~steels~~ 20Kh [37329-39-8], 27KhGR [58209-72-6], 20KhN2M [39411-21-7], 30KhMA [12672-15-0], and 18KhGT [12718-23-9] was done 7-14 h at 870-80° in endogas atm. with natural gas addns. The cylinders were then quenched in oil at 140°. Surface carburization was detd. in relation to C distribution in the carburized layer and hardness. Equation was developed for predicting the case depth.
 IT 58209-72-6, uses and miscellaneous
 RL: USES (Uses)
 (case depth of carburized)
 RN 58209-72-6 CAPLUS
 CN Iron alloy, base, Fe 96-98,Cr 0.70-1.00,Mn 0.70-1.00,Si 0.17-0.37,C 0.25-0.31,Cu 0-0.30,Ni 0-0.30,W 0-0.30,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (27KhGR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====	=====+=====	=====
Fe	96 - 98	7439-89-6
Cr	0.70 - 1.00	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
C	0.25 - 0.31	7440-44-0
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
W	0 - 0.30	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)
 ST ~~steel~~ cylinder carburizing
 IT Carburizing
 (case depth in, hardness of ~~steel~~ in relation to)
 IT 12672-15-0, uses and miscellaneous 12718-23-9, uses and miscellaneous
 37329-39-8, uses and miscellaneous 39411-21-7 58209-72-6,
 uses and miscellaneous 58209-73-7
 RL: USES (Uses)
 (case depth of carburized)

L13 ANSWER 87 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1980:412105 CAPLUS Full-text
 DOCUMENT NUMBER: 93:12105
 ORIGINAL REFERENCE NO.: 93:2075a,2078a
 TITLE: Interaction of titanium nitride with metallic melts
 AUTHOR(S): Gurevich, Yu. G.; Frage, N. R.
 CORPORATE SOURCE: Mashinostroït. Inst., Kurgan, USSR
 SOURCE: Tezisy Nauchn. Soobshch. Vses. Konf. Str. Svoistvam Met. Shlakovykh Rasplavov, 3rd (1978), Volume 2, 184-6. Akad. Nauk SSSR, Ural. Nauchn. Tsentr: Sverdlovsk, USSR.
 CODEN: 43GIAR
 DOCUMENT TYPE: Conference
 LANGUAGE: Russian

AB The kinetics of TiN dissoln. in Fe-O [12739-25-2], Fe-Ni [11148-11-1], ~~steel~~ ShKh15 [12725-40-5], 25KhGT [12741-98-9], and 20KhGMR [37312-00-8] were studied by using the rotating-specimen method. The TiN oxidn. rate in FeO in the 1st min was greatest and independent of time, in the 2nd min the rate decreased sharply, and after 2 min the TiN dissoln. ceased. TiN was ~~coated~~ with a dense oxide film. No TiN dissoln. occurred in Fe contg. <3% Ni. At >3% Ni TiN dissolved, and the Ti content in the melt increased. The Ti bonds increase in melts with increasing Ni concn. and decreased with stability of TiN in the melts.
 IT 37312-00-8
 RL: USES (Uses)
 (soln. kinetics in molten, of titanium nitride)

RN 37312-00-8 CAPLUS
 CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 56-7 (Nonferrous Metals and Alloys)
 ST titanium nitride soln ~~steel~~; iron soln titanium nitride; oxygen soln titanium nitride; nickel soln titanium nitride
 IT 11148-11-1 12725-40-5 12739-25-2 12741-98-9, uses and miscellaneous 37312-00-8
 RL: USES (Uses)
 (soln. kinetics in molten, of titanium nitride)
 IT 25583-20-4
 RL: PRP (Properties)
 (soln. kinetics of, in iron and ~~steel~~ melts)

L13 ANSWER 88 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1979:424887 CAPLUS Full-text

DOCUMENT NUMBER: 91:24887

ORIGINAL REFERENCE NO.: 91:4085a,4088a

TITLE: Diffusion saturation of ~~steels~~ with chromium

AUTHOR(S): Babushkin, B. V.; Makharov, D. M.

CORPORATE SOURCE: USSR

SOURCE: Metallurgiya (Minsk) (1978), 12, 92-3

CODEN: MTRGBV; ISSN: 0369-2450

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Chromizing of ~~steels~~ 20KhNR [12742-15-3], 40KhN [12742-05-1], and 20Kh13 [37241-55-7] was carried out by aluminothermic redn. at 1050-1100° in a powder composed of Al₂O₃ 29.40, Cr₂O₃ 51.45, Al 17.15, and NH₄Cl 2%. The diffusion layer contained a carbide zone of (Cr,Fe)₂₃C₆ and (Cr,Fe)₇C₃ phases and a solid soln. zone of high-Cr ferrite. The total depth of the diffusion zone decreased and the depth of the carbide zone increased with increasing C content. The max. microhardness (>2000 kg/mm²) was obsd. for Cr carbides on ~~steel~~ 40KhN, and min. (~1350 kg/mm²) for Cr carbides on ~~steel~~ 20Kh13.

IT 12742-15-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chromizing of, pack)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8

C	0.16	-	0.23	7440-44-0
W	0	-	0.20	7440-33-7
Mo	0	-	0.15	7439-98-7
V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)
 ST chromizing pack steel structure
 IT Chromizing
 (pack, of steels, carbide morphol. in)
 IT 12742-05-1 13742-15-3 37241-55-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chromizing of, pack)
 IT 12012-72-5DP, solid soln. with chromium carbide (Cr₂₃C₆) 12075-40-0DP,
 solid soln. with iron carbide (Fe₇C₃) 12075-42-2DP, solid soln. with
 chromium carbide (Cr₇C₃) 12105-81-6DP, solid soln. with iron carbide
 (Fe₂₃C₆)
 RL: FORM (Formation, nonpreparative); PREP (Preparation)
 (formation of, in chromized steel)

L13 ANSWER 89 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1978:567295 CAPLUS Full-text
 DOCUMENT NUMBER: 89:167295
 ORIGINAL REFERENCE NO.: 89:25893a,25896a
 TITLE: Stress corrosion susceptibility of highway bridge
 construction steels - phase IIB
 AUTHOR(S): Caton, R. G.; Guthrie, J. L.; Carter, C. S.
 CORPORATE SOURCE: Boeing Commmerc. Airplane Co., Seattle, WA, USA
 SOURCE: U. S. NTIS, PB Rep. (1976), PB-272493, 73 pp. Avail.:
 NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1977, 77(25),
 135
 CODEN: XPERCA; ISSN: 0099-8583
 DOCUMENT TYPE: Report
 LANGUAGE: English

AB Eleven steels typically used in highway bridge construction were
 evaluated for stress corrosion resistance in various environments under
 tension. The effects of welding and 5% cold work were also investigated.
 Lab. tests were verified by exposure of specimens at selected locations in
 the United States. Both ASTM A325 [67954-12-5] and ASTM A490
 [67954-11-4] bolts were evaluated for stress corrosion resistance in
 similar environments. The effects of hot dip galvanizing and mech.
 galvanizing on the stress corrosion susceptibility were also detd.
 Suspension cable and prestressing wires were evaluated for stress
 corrosion resistance. The suspension cable wires were tested with no
 coating, and with hot dip galvanized and electrogalvanized coatings.
 IT 52346-86-8, properties
 RL: PRP (Properties)
 (stress-corrosion susceptibility of, for highway bridge construction)
 RN 52346-86-8 CAPLUS
 CN Steel, (UNS K11630) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
Fe	97	- 98	7439-89-6
Mn	0.70	- 1.00	7439-96-5
Cr	0.40	- 0.65	7440-47-3
Si	0.20	- 0.35	7440-21-3
Mo	0.15	- 0.25	7439-98-7
C	0.12	- 0.21	7440-44-0
V	0.03	- 0.08	7440-62-2
S	0	- 0.04	7704-34-9
P	0	- 0.035	7723-14-0
Ti	0.01	- 0.03	7440-32-6
B	0.0005	- 0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)

ST steel bridge construction stress corrosion; structural steel stress corrosion; galvanizing steel stress corrosion; weld steel stress corrosion; cold work steel stress corrosion

IT Galvanized iron and steel
RL: USES (Uses)
(for highway bridge construction)

IT Bridges
(for highways, structural steels for, stress-corrosion susceptibility of)

IT Welds
(in structural steels, in highway bridge construction)

IT Bolts
(structural steel, for highway bridge construction)

IT 12725-37-0, properties 12731-93-0, properties 12732-02-4, properties 12732-05-7, properties 52346-86-8, properties 58397-66-3, properties 63747-69-3, properties 63849-06-9, properties 67954-11-4, properties 67954-12-5, properties
RL: PRP (Properties)
(stress-corrosion susceptibility of, for highway bridge construction)

L13 ANSWER 90 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1978:533594 CAPLUS Full-text

DOCUMENT NUMBER: 89:133594

ORIGINAL REFERENCE NO.: 89:20639a,20642a

TITLE: Effect of atmospheric corrosion on fatigue strength of steels and welded joints

AUTHOR(S): Gregor, Vladimir

CORPORATE SOURCE: Mater. Test. Lab., Weld. Res. Inst., Bratislava, Czech.

SOURCE: Zvaracske Spravy (1976), 26(4), 73-80

CODEN: ZVSPDI; ISSN: 0322-9785

DOCUMENT TYPE: Journal

LANGUAGE: English/Slovak

AB Fatigue strength of base metal and butt-welded joints was detd. in bending and cyclic tension for the low-alloy steel, grades 15217.1 [12742-62-0], 11523.1 [71497-79-5], 16224 [60707-55-3], and 16224 + 0.37% Cu. Effects of corrosion on fatigue strength were detd. for accelerated chamber corrosion (5-150 cycles at 35° in SO2-contg. atm., with humidity and drying), and after 1-yr atm. exposure at a chem. plant. Corrosion rates were similar for all steels. The Cu-modified 16224 steel lost its surface corrosion layer after 30-50 cycles and developed a roughened surface, while the regular 16224 steel did not. Fatigue strength was rapidly decreased by corrosion exposure to ≤40 cycles, remaining nearly const. for longer cycling. Performance of 15217.1 steel was comparable to that of 11523.1 steel.

IT 60707-55-3

RL: PRP (Properties)

(fatigue and weld strength of, after corrosion)

RN 60707-55-3 CAPLUS

CN Iron alloy, base, Fe 95-97,Cr 0.70-1.00,Mn 0.70-1.00,Ni 0.70-1.00,Mo 0.30-0.50,Si 0.12-0.35,Cu 0-0.30,C 0.12-0.18,V 0.03-0.08,Ti 0-0.04,P 0-0.030,S 0-0.030,B 0.002-0.005 (CSN 16 224) (9CI) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
Fe	95	- 97	7439-89-6
Cr	0.70	- 1.00	7440-47-3
Mn	0.70	- 1.00	7439-96-5
Ni	0.70	- 1.00	7440-02-0
Mo	0.30	- 0.50	7439-98-7
Si	0.12	- 0.35	7440-21-3
Cu	0	- 0.30	7440-50-8
C	0.12	- 0.18	7440-44-0
V	0.03	- 0.08	7440-62-2
Ti	0	- 0.04	7440-32-6
P	0	- 0.030	7723-14-0
S	0	- 0.030	7704-34-9
B	0.002	- 0.005	7440-42-8

CC 55-9 (Ferrous Metals and Alloys)

ST corrosion fatigue low alloy steel; weld fatigue corrosion steel;
cyclic corrosion fatigue steel

IT Welding
(arc, of low-alloy steels, for fatigue and corrosion test)

IT Welds
(butt, in low-alloy steels, fatigue strength in relation to
atm. corrosion of)

IT 12742-62-0 60707-55-3 71497-79-5, properties
RL: PRP (Properties)
(fatigue and weld strength of, after corrosion)

IT 7440-50-8, uses and miscellaneous
RL: USES (Uses)
(in low-alloy steels, accelerated chamber corrosion in
relation to)

IT 64941-69-1 67661-29-4, uses and miscellaneous 67663-48-3, uses and
miscellaneous
RL: USES (Uses)
(welding electrodes, for low-alloy steels)

L13 ANSWER 91 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1978:463151 CAPLUS Full-text

DOCUMENT NUMBER: 89:63151

ORIGINAL REFERENCE NO.: 89:9753a,9756a

TITLE: Determination of the chemical reaction rate constant
during the treatment of steel in an endothermic
atmosphere

AUTHOR(S): Gyulikhandanov, E. L.; Kislenkov, V. V.

CORPORATE SOURCE: Leningrad, USSR

SOURCE: Izvestiya Akademii Nauk SSSR, Metally (1978), (3),
189-91

CODEN: IZNMAQ; ISSN: 0568-5303

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The high-temp. measurement of elec. resistivity change in steel foil
during carburization and decarburization were used to det. the temp.
dependence of the reaction const. between endothermic atms. of different
comps. and unalloyed γ -Fe. The reaction const. was related to the
thermodn. activity of C in alloyed austenite at 925°, i.e., the
carburization temp. The value is applicable to any alloy steel and with
the diffusion coeff. data is useful in detg. the C distribution through
the layer during carburization in the endothermic atm. Foils of Armco
Fe and carburizing steels 12KhN3A [12750-62-8], 18Kh2N4VA
[12742-21-1], 20KhGMR [37312-00-8], and 20Kh3MVF [37246-14-3] were
used in the measurements.

IT 37312-00-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(carburization of, in endothermic atm.)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)

ST steel carburization endothermic atm
IT Carburizing
(of iron and steel in endothermic atm.)
IT 12742-21-1 12750-62-8 37246-14-3 37312-00-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(carburization of, in endothermic atm.)

L13 ANSWER 92 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1977:62593 CAPLUS Full-text
DOCUMENT NUMBER: 86:62593
ORIGINAL REFERENCE NO.: 86:9887a,9890a
TITLE: Protection of parts in nonmuffle units from gaseous
carbonitridation by chromium plating
AUTHOR(S): Rotin, A. I.; Fishtein, B. M.; Shluger, M. A.
CORPORATE SOURCE: Rostov.-na-Donu Nauchno-Issled. Inst. Tekhnol.
Mashinostr., Rostov-on-Don, USSR
SOURCE: Zashchita Metallov (1976), 12(6), 716-18
CODEN: ZAMEA9; ISSN: 0044-1856
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Steel plated with Cr from a bath contg. CrO3 350-400, H2SO4 1.9-2.0,
Cr2O3 5-8, NaOH 40-60 g/L, at temp. 18-19° and c.d. 20-100 A/dm2
and after previous anodic surface cleaning at c.d. 25-60 A/dm2 had no
diffusion of C or N in it. The depth of the carbonitridated layer in
the nonprotected surfaces of the steel was 0.9-1.1 mm after 12.5 h.
IT 59738-82-8, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbonitridation of, chromium electroplate in prevention of)
RN 59738-82-8 CAPLUS
CN Steel, (20KhGNTR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	97 - 98	7439-89-6
Mn	0.80 - 1.00	7439-96-5
Cr	0.40 - 0.70	7440-47-3
Ni	0.40 - 0.70	7440-02-0
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.18 - 0.24	7440-44-0
Ti	0.03 - 0.09	7440-32-6
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
B	0.001	7440-42-8

CC 72-6 (Electrochemistry)
ST chromium electroplate steel carbonitridation
IT Carbonitridation and Cyanidation
(of steel, chromium electroplating in prevention of)
IT 12718-23-9, uses and miscellaneous 37329-39-8, uses and miscellaneous
51258-45-8 59738-82-8, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbonitridation of, chromium electroplate in prevention of)
IT 7440-47-3, uses and miscellaneous
RL: PRP (Properties)
(electroplating of, on steel, for carbonitridation
prevention)

L13 ANSWER 93 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1977:20628 CAPLUS Full-text
DOCUMENT NUMBER: 86:20628
ORIGINAL REFERENCE NO.: 86:3299a,3302a
TITLE: Hardness of metals during strengthening by surface
plastic deformation
AUTHOR(S): Yankov, N. I.; Aleksandrov, B. I.; Yankov, I. I.
CORPORATE SOURCE: Inst. Probl. Nadezhnosti Dolgovechnosti Mash., Minsk,
USSR
SOURCE: Vestsi Akademii Navuk BSSR, Seryya Fizika-Tekhnichnykh
Navuk (1976), (3), 5-9

DOCUMENT TYPE:

Journal

LANGUAGE:

Russian

AB The stress-strain relation for Cu, Al, and ~~steels~~ was examd. A method was applied for calcg. the max. hardness of the surface layer during strengthening by surface plastic deformation. For ~~steels~~, the calcd. results agreed with exptl. data.

IT 59738-82-8, uses and miscellaneous

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hardening of, by surface plastic deformation)

RN 59738-82-8 CAPLUS

CN Steel, (20KhGNTR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====	=====+=====	=====
Fe	97 - 98	7439-89-6
Mn	0.80 - 1.00	7439-96-5
Cr	0.40 - 0.70	7440-47-3
Ni	0.40 - 0.70	7440-02-0
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.18 - 0.24	7440-44-0
Ti	0.03 - 0.09	7440-32-6
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
B	0.001	7440-42-8

CC 56-7 (Nonferrous Metals and Alloys)

ST copper surface layer hardness; aluminum surface layer hardness;
steel surface layer hardness; surface plastic deformation metal

IT 7429-90-5, properties 7440-50-8, properties 11121-90-7, properties
12611-78-8 12725-40-5 12731-93-0, properties 12732-25-1 12742-05-1
12742-24-4 12742-30-2 12743-82-7, uses and miscellaneous 12750-62-8
37268-90-9, properties 37269-19-5, properties 39294-21-8
59738-82-8, uses and miscellaneous 61431-72-9

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hardening of, by surface plastic deformation)

L13 ANSWER 94 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1976:546672 CAPLUS Full-text

DOCUMENT NUMBER: 85:146672

ORIGINAL REFERENCE NO.: 85:23487a,23490a

TITLE: Protecting parts from gas carburization and
carbonitriding by electroplating with chromium

AUTHOR(S): Rotin, A. I.; Fishtein, B. M.; Shluger, M. A.

CORPORATE SOURCE: Nauchno-Issled. Inst. Tsvetn. Metall., Rostov-on-Don,
USSR

SOURCE: Metallovedenie i Termicheskaya Obrabotka Metallov
(1976), (5), 49-50
CODEN: MTOMAX; ISSN: 0026-0819

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Cylindrical specimens of 20Kh [37329-39-8], 18KhGT [12718-23-9], 12KhN3A [12750-62-8], and 20KhGNTR [59738-82-8] ~~steels~~ were electroplated with Cr. Then, specimens were carbonitrided at 870° in an atm. contg. CO 18-19, H 42-44, CH₄ 1-2, NH₃ 3%, and balance N and oil quenched from 830°. The carbonitrided layer depth was 0.9-1.1 mm on the surface of the uncoated specimens. A 5 μ thick Cr coating inhibited diffusion of C and N. During carbonitriding, a thin interlayer of Cr₂₃C₆ and Cr₇C₃ formed at the Cr-~~steel~~ interface. This carbide interlayer acted as a barrier to C diffusion.

IT 59738-82-8, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(carburization and carbonitriding of, chromium electroplating for
stopoff in)

RN 59738-82-8 CAPLUS

CN Steel, (20KhGNTR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Component	Percent	Registry Number
Fe	97 - 98	7439-89-6
Mn	0.80 - 1.00	7439-96-5
Cr	0.40 - 0.70	7440-47-3
Ni	0.40 - 0.70	7440-02-0
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.18 - 0.24	7440-44-0
Ti	0.03 - 0.09	7440-32-6
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
B	0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)
ST chromium electroplating protection ~~steel~~ carbonitriding
IT Carbonitridation and Cyanidation
Carburization
(of ~~steel~~, chromium electroplate for stopoff in)
IT 12718-23-9, reactions 12750-62-8 37329-39-8, reactions
59738-82-8, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(carburization and carbonitriding of, chromium electroplating for
stopoff in)
IT 7440-47-3, uses and miscellaneous
RL: USES (Uses)
(electroplating on ~~steel~~, as stopoff for carburization and
carbonitriding prevention)

L13 ANSWER 95 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1976:48042 CAPLUS Full-text
DOCUMENT NUMBER: 84:48042
ORIGINAL REFERENCE NO.: 84:7875a,7878a
TITLE: Diffusion saturation of ~~steel~~ by carbon and manganese
AUTHOR(S): Rishchev, I. A.; Shcherbakov, E. D.; Khudokormova, R.
N.; Martynyuk, M. N.
CORPORATE SOURCE: USSR
SOURCE: Khim.-Term. Obrab. Met. Splavov, Tezisy Dokl. Vses.
Nauchn. Konf., 2nd (1974), 122-3. Editor(s):
Lyakhovich, L. S. Beloruss. Politekh. Inst.: Minsk,
USSR.
CODEN: 31GQAO
DOCUMENT TYPE: Conference
LANGUAGE: Russian

AB The simultaneous cementation of 8 C and low-alloy ~~steels~~ with C and Mn
[7439-96-5] in powd. Bondyuzhsk carburizing agent or ferromanganese
[12604-53-4] or their mixts. contg. Al2O3 and NH4Cl
(ferromanganese-Al2O3-NH4Cl ratio 67:30:3) took place in metal crucibles
with consumable covers at 1000° during 4, 6, and 8 hr. The
diffusion ~~layers~~ of high-Mn austenite with finely dispersed carbide
inclusions formed in mixts. contg. the carburizer 50-80, ferromanganese
15-30, NH4Cl 1-2%, and the rest Al2O3, had wear resistances higher than
that of G13 austenitic Mn ~~steel~~.
IT 12742-15-3
RL: USES (Uses)
(carburization and manganese cementation of, with ferromanganese-contg.
comps.)
RN 12742-15-3 CAPLUS
CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0

W	0	-	0.20	7440-33-7
Mo	0	-	0.15	7439-98-7
V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)

ST ~~steel~~ cementation carbon manganese; carburization ~~steel~~
ferromanganese; ferromanganese cementation ~~steel~~

IT Cementation
(of ~~steel~~ with manganese, with ferromanganese-contg. mixts.)

IT Carburization
(of ~~steels~~, combined with manganese cementation, with
ferromanganese-contg. compns.)

IT 12725-33-6, uses and miscellaneous 12731-92-9, uses and miscellaneous
12742-15-3 12742-21-1 12743-82-7, uses and miscellaneous
12750-62-8 37268-90-9, uses and miscellaneous 73286-08-5, reactions
RL: USES (Uses)
(carburization and manganese cementation of, with ferromanganese-contg.
compns.)

IT 12604-53-4
RL: USES (Uses)
(cementation of ~~steels~~ with mixts. contg., for simultaneous
carburization and manganese cementation)

IT 7439-96-5, uses and miscellaneous
RL: USES (Uses)
(cementation with, combined with carburization, of carbon and low-alloy
~~steels~~)

L13 ANSWER 96 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1975:483285 CAPLUS Full-text

DOCUMENT NUMBER: 83:83285

ORIGINAL REFERENCE NO.: 83:13051a,13054a

TITLE: Magnetic, electric, and mechanical properties of
20KhGR and 20KhGMR ~~steels~~ and their carburized layers

AUTHOR(S): Kuznetsov, I. A.; Somova, V. M.; Tsar'kova, T. P.;
Bashkirov, Yu. P.

CORPORATE SOURCE: USSR

SOURCE: Struktura i svoistva tverdykh tel (1973), (1), 164-84
From: Ref. Zh., Metall. 1974, Abstr. No. 7I547

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Title only translated.

IT 37312-00-8 ~~56995-50-7~~, properties

RL: USES (Uses)

(elec. and magnetic and mech. properties of carburized)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si
0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

RN 56995-50-7 CAPLUS
 CN Iron alloy, base, Fe 96-98,Cr 0.75-1.05,Mn 0.70-1.00,Si 0.17-0.37,Cu 0-0.30,Ni 0-0.30,C 0.18-0.24,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhGR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	96 - 98	7439-89-6
Cr	0.75 - 1.05	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
Ni	0 - 0.30	7440-02-0
C	0.18 - 0.24	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-8 (Ferrous Metals and Alloys)
 Section cross-reference(s): 76, 77
 ST ~~steel~~ carburized property; magnetic property carburized ~~steel~~; mech property carburized ~~steel~~; elec property carburized ~~steel~~
 IT Electric property
 Magnetic property and Magnetism
 (of carburized ~~steel~~)
 IT 37312-00-8 56995-50-7, properties
 RL: USES (Uses)
 (elec. and magnetic and mech. properties of carburized)

L13 ANSWER 97 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1975:101616 CAPLUS Full-text
 DOCUMENT NUMBER: 82:101616
 ORIGINAL REFERENCE NO.: 82:16213a,16216a
 TITLE: Carburization in an electrothermal fluidized bed
 AUTHOR(S): Androshchuk, V. N.; Tsubanov, A. G.; Nikitin, V. S.
 CORPORATE SOURCE: USSR
 SOURCE: Sbornik Nauchnykh Trudov, Belorusskii Institut Mekhanizatsii Sel'skogo Khozyaistva (1972), 21, 195-7
 CODEN: SBMKAP; ISSN: 0370-8640
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB Carburization of 10-20 x 20-30 mm 20Kh, 20KhNR, and 18KhGT ~~steel~~ was accomplished in a Kryptol fluidized bed elec. furnace at 900-1000°. The carburization gas contained CO 20, CH4 3.8, H 13.5, CO2 1.2, and O 0.35%. A 1.25-mm carburized ~~layer~~ was obtained in 30 min. at 1000°.

IT 12742-15-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, in fluidized bed)

RN 12742-15-3 CAPLUS
 CN Iron alloy, base, Fe 95-98,Ni 0.80-1.10,Cr 0.70-1.10,Mn 0.60-0.90,Si 0.17-0.37,Cu 0-0.30,C 0.16-0.23,W 0-0.20,Mo 0-0.15,V 0-0.05,P 0-0.035,S 0-0.035,Ti 0-0.03,B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7

V	0	-	0.05	7440-62-2
P	0	-	0.035	7723-14-0
S	0	-	0.035	7704-34-9
Ti	0	-	0.03	7440-32-6
B			0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)
 ST carburization chromium ~~steel~~; electrothermal fluidized bed carburizing
 IT Carburization
 (of ~~steel~~, in fluidized bed)
 IT 12718-23-9, reactions 12742-15-3 37329-39-8, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, in fluidized bed)

L13 ANSWER 98 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1974:405409 CAPLUS Full-text
 DOCUMENT NUMBER: 81:5409
 ORIGINAL REFERENCE NO.: 81:883a,886a
 TITLE: Thermophysical properties of ~~steel~~ scale at
 different temperatures
 AUTHOR(S): Severdenko, V. P.; Makushok, E. M.; Ravin, A. N.
 CORPORATE SOURCE: Fiz.-Tekh. Inst., Minsk, USSR
 SOURCE: Vestsi Akademii Navuk BSSR, Seryya Fizika-Tekhnichnykh
 Navuk (1974), (1), 33-7
 CODEN: VABFAF; ISSN: 0002-3566

DOCUMENT TYPE: Journal
 LANGUAGE: Russian
 AB The thermophys. properties (d. sp. heat, heat cond., and heat cond.
 coeff.) at 20-700° were detd. for the scale component oxides and
 for the scales on widely used forged and rolled 45, 25KhGT, 20KhNR, 40Kh,
 ShKh15, and Kh18N10T ~~steels~~.
 IT 12742-15-3
 RL: USES (Uses)
 (thermophys., of scale coatings on)
 RN 12742-15-3 CAPLUS
 CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si
 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-8 (Ferrous Metals and Alloys)
 ST thermophys property ~~steel~~ scale; oxide scale forged rolled ~~steel~~;
 stainless ~~steel~~ scale; alloy low ~~steel~~ scale
 IT Heat capacity
 Thermal conductivity and conduction
 (of scale, on ~~steel~~)
 IT Scale (coating)
 (thermophys. properties of, on ~~steel~~)
 IT 1309-37-1, properties 1317-61-9 1345-25-1, properties
 RL: PRP (Properties)
 (thermophys., in scale on ~~steel~~)
 IT 12611-78-8 12725-40-5 12741-98-9, properties 12742-15-3
 37268-90-9, properties 39344-94-0, properties
 RL: USES (Uses)

(thermophys., of scale coatings on)

L13 ANSWER 99 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1974:29530 CAPLUS Full-text

DOCUMENT NUMBER: 80:29530

ORIGINAL REFERENCE NO.: 80:4865a,4868a

TITLE: Effect of chemicothermal treatment in hydrogen-containing atmospheres on static crack and brittle strengths of case-hardened steel

AUTHOR(S): Dukarevich, I. S.; Balter, M. A.

CORPORATE SOURCE: USSR

SOURCE: Vestnik Mashinostroeniya (1973), 53(8), 62-5

CODEN: VMASAV; ISSN: 0042-4633

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Thermochem. treatment is developed in controlled gas atm. contg. H, which is readily adsorbed on the surface. The diffusion coeff. of H is 3-4 orders higher than the diffusion coeffs. of C and N in Fe, and therefore the depth of H-satd. zone is considerably greater than that of the case-hardened or carbonitrided layers. The effects of H satn. on static and brittle strength of steels, after various carburizing treatments in natural gas, carbonitridation in natural gas and ammonia, hardening of carburized steel with heating in endogas with or without addn. of natural gas were studied for the core and the diffusion-coated layer at a relative carburized layer depth 0.25-0.33. A decrease in strength and plasticity during static bending and elongation testing of carburized 20Kh2N4A (Cr-Ni) steel was obsd. The effect of H pickup of steel during treatment in a H-contg. atm., causing a decrease in static and brittle strengths, must be considered in use of diffusion coating. For casehardening and carbonitridation the steel contains $\leq 0.25\%$ C. Steel with 0.30-0.35% C is extremely sensitive to embrittlement by H. Satn. with H during casehardening and carbonitridation does not decrease the resistance to brittle fracture if the steel is subsequently hardened after heating in air for H desorption, resulting in improved strength and plasticity.

IT 37312-00-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(carburization of, hydrogen effect on plasticity and strength in relation to)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGNR) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
=====+=====+=====			
Fe	95	- 97	7439-89-6
Ni	0.80	- 1.10	7440-02-0
Cr	0.70	- 1.10	7440-47-3
Mn	0.70	- 1.00	7439-96-5
Si	0.17	- 0.37	7440-21-3
Cu	0	- 0.30	7440-50-8
C	0.16	- 0.23	7440-44-0
W	0	- 0.20	7440-33-7
Mo	0	- 0.15	7439-98-7
V	0	- 0.05	7440-62-2
P	0	- 0.035	7723-14-0
S	0	- 0.035	7704-34-9
Ti	0	- 0.03	7440-32-6
B		0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)

ST carburization steel mech property; carbonitridation steel mech property; cementation steel hydrogen embrittlement

IT Natural gas

RL: USES (Uses)

(carbonitridation in, of steels, plasticity and strength in relation to)

IT Diffusion

(of hydrogen in casehardening of steels, plasticity and

strength in relation to)
 IT Carbonitridation and Cyanidation
 Carburization
 (of ~~steels~~, hydrogen effect on plasticity and strength in
 relation to)
 IT 1333-74-0, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbonitridation in gases contg., of ~~steels~~, plasticity and
 strength in relation to)
 IT 7664-41-7, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbonitridation in, of ~~steels~~, plasticity and strength in
 relation to)
 IT 37312-00-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, hydrogen effect on plasticity and strength in
 relation to)

L13 ANSWER 100 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN

ACCESSION NUMBER: 1973:482245 CAPLUS Full-text
 DOCUMENT NUMBER: 79:82245
 ORIGINAL REFERENCE NO.: 79:13333a,13336a
 TITLE: Improvement of gas carburization
 AUTHOR(S): Beloruchev, L. V.; Korolev, V. A.; Cherepkova, K. F.
 CORPORATE SOURCE: USSR
 SOURCE: Nadezhnost Dolgovechnost Metal. Mater. Mashinostr.
 Priborostr. (1972) 99-102
 From: Ref. Zh., Met. 1973, Abstr. No. 11786
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB Progress in gas carburization by using endothermically controlled atms. as
 carrier gas in the USSR and abroad was studied. The feasibility of
 carburization in N with addn. of natural gas was tested. ~~Steel~~ 20KhGMR
 (Cr-Mn-Ni-B) was heated in an exptl. furnace at 940° for 10 hr in a
 mixt. of N with 6% H and 5% natural gas. A 1-8 mm carburized layer was
 obtained and internal oxidn. was absent. The carburizing capacity of a
 N-natural gas mixt. was high as was the diffusion rate of C in this mixt.

IT 37312-00-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, in natural gas contg. nitrogen)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si
 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S
 0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 97	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.70 - 1.00	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)

ST gas carburization alloy ~~steel~~; natural gas carburization ~~steel~~;
 chromium manganese ~~steel~~ carburization; nickel chromium ~~steel~~
 carburization; boron contg ~~steel~~ carburization

IT Natural gas
 RL: USES (Uses)
 (carburization of ~~steel~~ in nitrogen-contg.)

IT Carburization

(of steel, in natural gas contg. nitrogen)
 IT 7727-37-9, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of steel in natural gas contg.)
 IT 37312-00-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carburization of, in natural gas contg. nitrogen)

L13 ANSWER 101 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1973:162649 CAPLUS Full-text
 DOCUMENT NUMBER: 78:162649
 ORIGINAL REFERENCE NO.: 78:26093a,26096a
 TITLE: Strength characteristics of scale
 AUTHOR(S): Severdenko, V. P.; Makushok, E. M.; Ravin, A. N.
 CORPORATE SOURCE: Minsk, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Metallurgy (1973), (1),
 123-7

CODEN: IZNMAQ; ISSN: 0568-5303
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

AB A method for detg. the yield strength, σ , of scales on St. 45, ShKh15, Kh18N10T, 20KhNR, and 25KhGT steels is discussed, and σ values for these scales at various temps. ($t = 600-1150^\circ$) and degrees of deformation (0.50-0.80) are tabulated. At high temp. and similar deformation conditions, the strengths of scales are lower than those of steels, i.e. scale decreases the friction coeff. of steels and can act as a lubricant during forming of steel. In absence of phase transformation in scales, their σ - t relations are exponential.

IT 12742-15-3, properties
 RL: USES (Uses)
 (yield strength of scale on)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55-11 (Ferrous Metals and Alloys)
 ST yield strength mill scale; friction steel scale strength
 IT Scale (coating)
 (mill, yield strength of)
 IT 12725-40-5 12741-98-9, properties 12742-15-3, properties
 37268-90-9, properties 54611-20-0
 RL: USES (Uses)
 (yield strength of scale on)

L13 ANSWER 102 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
 ACCESSION NUMBER: 1972:529437 CAPLUS Full-text
 DOCUMENT NUMBER: 77:129437
 ORIGINAL REFERENCE NO.: 77:21303a,21306a
 TITLE: Use of protective glass coatings during the heat treatment of steel components
 AUTHOR(S): Emel'yanenko, N. L.; Shagabutdinov, R. I.; Valeev, R. ArcelorMittal Ex. 2001
 Posco Co. LTD. v. ArcelorMittal
 IPR2024-01377
 Page 1409 of 1430

CORPORATE SOURCE: M.; Smirnova, L. P.
 SOURCE: Chelyab. Trakt. Zavod, Chelyabinsk, USSR
 Metallovedenie i Termicheskaya Obrabotka Metallov
 (1972), (7), 74-5
 CODEN: MTOMAX; ISSN: 0026-0819

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The protective capacities of various coatings deposited on the surfaces of R12 and R18 (Cr-W-V), St. 45, R6M3 and R9K5 (Cr-Co-W-V), R9M4 (Cr-W-V), 20Kh (Cr), and 20KhGMR (Cr-Mn-Ni-B) steels during heating at 1250-1400° were examd. All the steels were preheated at 860° for 30 min, annealed at 1240-70° for 15-20 min, and oil quenched. Preliminary results showed that the best protective properties were achieved by using an enamel of the EZh-01 type contg. ~25% Al2O3. The same enamel was used to protect the steels 20KhGMR and 18Kh2N4VA (Cr-Ni-W) from decarburization during their thermal treatment (annealing at 870° for 2 hr and quenching from 880°, then tempering at 220° for 4 hr). In the presence of EZh-01, decarburization is completely suppressed, whereas in its absence the depth of the decarburized zone may reach 0.1 mm. After the thermal treatment, the coating can be easily removed by shot blasting or by dissolving in molten KOH or NaOH at 500-50°.

IT 37312-00-8

RL: USES (Uses)

(heat treatment of, protective glass coatings for)

RN 37312-00-8 CAPLUS

CN Iron alloy, base, Fe 95-97, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.70-1.00, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhGMR) (CA INDEX NAME)

Component	Component Percent		Component Registry Number
=====+=====	=====+=====		=====
Fe	95	- 97	7439-89-6
Ni	0.80	- 1.10	7440-02-0
Cr	0.70	- 1.10	7440-47-3
Mn	0.70	- 1.00	7439-96-5
Si	0.17	- 0.37	7440-21-3
Cu	0	- 0.30	7440-50-8
C	0.16	- 0.23	7440-44-0
W	0	- 0.20	7440-33-7
Mo	0	- 0.15	7439-98-7
V	0	- 0.05	7440-62-2
P	0	- 0.035	7723-14-0
S	0	- 0.035	7704-34-9
Ti	0	- 0.03	7440-32-6
B		0.001	7440-42-8

CC 55-6 (Ferrous Metals and Alloys)

ST coating steel heat treatment; enamel coating steel;
 decarburization prevention steel enameling

IT Coating removers

(alkali metal hydroxide, for protective glass dissoln. on steel after heat treatment)

IT Enamels

(aluminum oxide-contg., on steel for decarburization prevention during heat treatment)

IT Glass

RL: USES (Uses)

(coatings, on steel for decarburization prevention during heat treatment)

IT Coating materials

(glass, on steel for decarburization prevention during heat treatment)

IT 1310-58-3, uses and miscellaneous 1310-73-2, uses and miscellaneous

RL: USES (Uses)

(glass coating removal by molten, from heat-treated steel)

IT 12715-04-7, uses and miscellaneous 12743-13-4 37241-62-6 37302-40-2

37302-41-3 37302-42-4, uses and miscellaneous 37312-00-8

37329-39-8, uses and miscellaneous

RL: USES (Uses)

(heat treatment of, protective glass coatings for)

L13 ANSWER 103 OF 103 CAPLUS COPYRIGHT 2021 ACS on STN
ACCESSION NUMBER: 1972:116614 CAPLUS Full-text
DOCUMENT NUMBER: 76:116614
ORIGINAL REFERENCE NO.: 76:18841a,18844a
TITLE: Mechanical properties of nitrocemented steels at static loads
AUTHOR(S): Rozenberg, S. E.
CORPORATE SOURCE: USSR
SOURCE: Khim.-Term. Obrab. Metal. Splavov (1971) 98-101
From: Ref. Zh., Met. 1971, Abstr. No. 10I398
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB The effects of the carbonitrided layer depth (0.55, 0.8, and 1.1), chem. compn., and microstructure on the notch toughness and tensile strength (during bending and torsion) were detd. for the 20KhNR, 25KhGM, and 25KhGT steels. The carbonitrided 20KhNR steel had better mech. properties than the 25KhGM and 25KhGT steels. An increase in the carbonitrided layer depth from 0.55 to 1.1 mm results in a decrease of tensile strength during bending, notch toughness, and torsion angle, but increased the torsional strength. The content of N in the carbonitrided layer should be $\leq 0.3\%$. Cold treatment decreased all of the mech. properties. The carbonitrided 25KhGM steel has a strength similar to that of the 20KhNR steel. The 25KhGT steel has the lowest strength but the plasticity of its carbonitrided layer is higher than that on the 25KhGM steel.

IT 12742-15-3, properties
RL: PRP (Properties)
(mech., carbonitridation effect on)

RN 12742-15-3 CAPLUS

CN Iron alloy, base, Fe 95-98, Ni 0.80-1.10, Cr 0.70-1.10, Mn 0.60-0.90, Si 0.17-0.37, Cu 0-0.30, C 0.16-0.23, W 0-0.20, Mo 0-0.15, V 0-0.05, P 0-0.035, S 0-0.035, Ti 0-0.03, B 0.001 (20KhNR) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	95 - 98	7439-89-6
Ni	0.80 - 1.10	7440-02-0
Cr	0.70 - 1.10	7440-47-3
Mn	0.60 - 0.90	7439-96-5
Si	0.17 - 0.37	7440-21-3
Cu	0 - 0.30	7440-50-8
C	0.16 - 0.23	7440-44-0
W	0 - 0.20	7440-33-7
Mo	0 - 0.15	7439-98-7
V	0 - 0.05	7440-62-2
P	0 - 0.035	7723-14-0
S	0 - 0.035	7704-34-9
Ti	0 - 0.03	7440-32-6
B	0.001	7440-42-8

CC 55 (Ferrous Metals and Alloys)
ST carbonitrided steel property
IT Carbonitridation and Cyanidation
(of steel, mech. properties in relation to)

IT 12597-69-2, properties 12741-98-9, properties 12742-15-3, properties
RL: PRP (Properties)
(mech., carbonitridation effect on)

=>

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By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23280 7590 02/09/2021
Davidson, Davidson & Kappel, LLC
589 8th Avenue
22nd Floor
New York, NY 10018

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Simon Steiner (Typed or printed name)

/Simon Steiner/ (Signature)

February 9, 2021 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/413,799	05/16/2019	Pascal DRILLET	20631.1028CON5	7637

TITLE OF INVENTION: Coated Steel Strips, Coated Stamped Products and Methods

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/10/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
SCHLEIS, DANIEL J	1784	428-653000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Davidson, Davidson & Kappel, LLC

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

ArcelorMittal

Luxembourg, Luxembourg

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 500552

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /williamcgehris/

Date February 9, 2021

Typed or printed name William C. Gehris

Registration No. 38156

ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

Electronic Patent Application Fee Transmittal				
Application Number:		16413799		
Filing Date:		16-May-2019		
Title of Invention:		Coated Steel Strips, Coated Stamped Products and Methods		
First Named Inventor/Applicant Name:		Pascal DRILLET		
Filer:		William C. Gehris/Simon Steiner		
Attorney Docket Number:		20631.1028CON5		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1200

Electronic Acknowledgement Receipt

EFS ID:	41878012
Application Number:	16413799
International Application Number:	
Confirmation Number:	7637
Title of Invention:	Coated Steel Strips, Coated Stamped Products and Methods
First Named Inventor/Applicant Name:	Pascal DRILLET
Customer Number:	23280
Filer:	William C. Gehris/Simon Steiner
Filer Authorized By:	William C. Gehris
Attorney Docket Number:	20631.1028CON5
Receipt Date:	09-FEB-2021
Filing Date:	16-MAY-2019
Time Stamp:	14:55:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 1200
RAM confirmation Number	E202129E55560588
Deposit Account	500552
Authorized User	Simon Steiner

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal
IPR2024-01377

37 CFR 1.19 (Document supply fees)
37 CFR 1.20 (Post Issuance fees)
37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IF.PDF	141026	no	1
			c2a03d638a9e47237fc317afc897868a2f1d bca0		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30545	no	2
			96c30217e94cedede5504277a2a52555eea ff743		

Warnings:

Information:

Total Files Size (in bytes):	171571
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc code: IDS

PTO/SB/08a (03-15)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 07/31/2016. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number	16413799
Filing Date	2019-05-16
First Named Inventor	Pascal DRILLET
Art Unit	
Examiner Name	SCHLEIS, DANIEL J
Attorney Docket Number	20631.1028CON5

U.S.PATENTS

Remove

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
Change(s) applied to document, P.H./ 2/18/2021	1	5116645	A	1992-05-26	Boston et al. ~~ARMCO STEEL CO LP~~	
	2	4257549	A	1981-03-24	Bricmont ~~ROBERTSON CO LLC~~	
	3	5495736	A	1996-03-05	Nishi et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020114884	A1	2002-08-22	FRIEDERSDORF FRITZ J et al.	

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	1	19749706	DE	C1	1999-03-04	MANNESMANN AG	See English Abstract and EPO machine translation	

ArcelorMittal Ex. 2001

Posco Co. LTD. v. ArcelorMittal

IPR2024-01377

PART B - FEE(S) TRANSMITTAL

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Davidson, Davidson & Kappel, LLC
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New York, NY 10018

Certificate of Mailing or Transmission

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Simon Steiner (Typed or printed name)

/Simon Steiner/ (Signature)

February 9, 2021 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/413,799	05/16/2019	Pascal DRILLET	20631.1028CON5	7637

TITLE OF INVENTION: Coated Steel Strips, Coated Stamped Products and Methods

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/10/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
SCHLEIS, DANIEL J	1784	428-653000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 Davidson, Davidson & Kappel, LLC

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2

3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

ArcelorMittal

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Luxembourg, Luxembourg

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

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5. Change in Entity Status (from status indicated above)

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NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /williamcgehris/

Date February 9, 2021

Typed or printed name William C. Gehris

Registration No. 38156

ArcelorMittal Ex 2001

Posco Co. LTD. v. ArcelorMittal

Electronic Acknowledgement Receipt	
EFS ID:	42017791
Application Number:	16413799
International Application Number:	
Confirmation Number:	7637
Title of Invention:	Coated Steel Strips, Coated Stamped Products and Methods
First Named Inventor/Applicant Name:	Pascal DRILLET
Customer Number:	23280
Filer:	William C. Gehris/Simon Steiner
Filer Authorized By:	William C. Gehris
Attorney Docket Number:	20631.1028CON5
Receipt Date:	25-FEB-2021
Filing Date:	16-MAY-2019
Time Stamp:	09:19:12
Application Type:	Utility under 35 USC 111(a)

Payment information:					
Submitted with Payment			no		
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IssueFees.PDF	141611	no	1
			f8c22c57b90d7a6e9aaaae2d5d836226444eb7991		
Warnings:					

Information:	
Total Files Size (in bytes):	141611
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/413,799	03/30/2021	10961602	20631.1028CON5	7637

23280 7590 03/10/2021
Davidson, Davidson & Kappel, LLC
589 8th Avenue
22nd Floor
New York, NY 10018

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Pascal DRILLET, Rozerieulles, FRANCE;
ArcelorMittal, Luxembourg, LUXEMBOURG;
Dominique Spehner, Balan, FRANCE;
Ronald Kefferstein, Saint Mitre Les Ramparts, FRANCE;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Application of: ARCELORMITTAL
Inventor(s): Drillet et al.
Application No.: 16/413,799
Filed: May 16, 2019
Patent No. : 10,961,602 B2
Issued: March 30, 2021
Attorney Docket No.: 20631.1028CON5
Confirmation No.: 7637
Examiner: Daniel J. Schleis
Title: Coated Steel Strips, Coated Stamped Products and Methods

Submitted electronically via EFS-WEB

April 19, 2021

REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 C.F.R. § 1.323

Sir:

Pursuant to 35 U.S.C. § 255 and 37 C.F.R. § 1.323, Applicant hereby requests that the U.S. Patent and Trademark Office issue a Certificate of Correction for the above-identified patent to correct mistakes of a clerical nature, typographical nature.

The following corrections are requested:

- 1) In column 7, line 8, -- . -- should be inserted between “ABCD” and “For sheets”;
- 2) In column 7, line 27, -- (e.g., -- should be inserted before “7.7”;
- 3) In column 12, line 19, -- . -- should be inserted between “coating” and “On series A”;
and
- 4) In column 13, line 12, -- . -- should be inserted between “surface” and “Resis-”.

Applicant submits that these corrections do not require changes which would constitute new matter or require reexamination.

The appropriate fees under 37 C.F.R. 1.20(a) in the amount of \$ 160.00 are submitted herewith. In the event that fees are due, the Commissioner is hereby authorized to charge the fee required for this correction to Deposit Account No. 50-0552.

Respectfully submitted,
DAVIDSON, DAVIDSON & KAPPEL, LLC

By: /Oleg Ioselevich/
(Oleg Ioselevich, Reg. No. 56,963)

Davidson, Davidson & Kappel, LLC
589 Eighth Ave, 22nd Floor
New York, New York 10018

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**Page 1 of 1

PATENT NO. : 10,961,602
APPLICATION NO.: 16/413,799
ISSUE DATE : Mar. 30, 2021
INVENTOR(S) : Pascal Drillet et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 7, line 8, -- . -- should be inserted between "ABCD" and "For sheets"
In column 7, line 27, -- (e.g., -- should be inserted before "7.7"
In column 12, line 19, -- . -- should be inserted between "coating" and "On series A"
In column 13, line 12, -- . -- should be inserted between "surface" and "Resis-"

MAILING ADDRESS OF SENDER (Please do not use Customer Number below):

Davidson, Davidson & Kappel, LLC
589 Eighth Ave, 22nd Floor
New York, New York 10018

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ArcelorMittal Ex. 2001
Posco Co. LTD. v. ArcelorMittal
IPR2024-01377
Page 1424 of 1430

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		16413799		
Filing Date:		16-May-2019		
Title of Invention:		Coated Steel Strips, Coated Stamped Products and Methods		
First Named Inventor/Applicant Name:		Pascal DRILLET		
Filer:		Oleg Ioselevich		
Attorney Docket Number:		20631.1028CON5		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
CERTIFICATE OF CORRECTION	1811	1	160	160

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				160

Electronic Acknowledgement Receipt

EFS ID:	42487161
Application Number:	16413799
International Application Number:	
Confirmation Number:	7637
Title of Invention:	Coated Steel Strips, Coated Stamped Products and Methods
First Named Inventor/Applicant Name:	Pascal DRILLET
Customer Number:	23280
Filer:	Oleg Ioselevich
Filer Authorized By:	
Attorney Docket Number:	20631.1028CON5
Receipt Date:	19-APR-2021
Filing Date:	16-MAY-2019
Time Stamp:	13:57:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 160
RAM confirmation Number	E20214IE00144345
Deposit Account	500552
Authorized User	Oleg Ioselevich

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.21 (Miscellaneous fees and charges)

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File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	206311028con5ReqCerCor_19 April21.pdf	501958	no	2
			b18e05364e397d816e1a3750878a2530c9a afe64		
Warnings:					
Information:					
2	Request for Certificate of Correction	sb0044_19April2021.pdf	228629	no	2
			a40453527dc4118408b141873fb57ba99a0 d1acf		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30308	no	2
			cbe6b149f357b36c47fb6e6c84fb6f851b898 a41		
Warnings:					
Information:					
Total Files Size (in bytes):			760895		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 10,961,602 B2
APPLICATION NO. : 16/413799
DATED : March 30, 2021
INVENTOR(S) : Pascal Drillet et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Specification

In Column 7, Line 8, -- . -- should be inserted between "ABCD" and "For sheets"

In Column 7, Line 27, -- (e.g., -- should be inserted before "7.7"

In Column 12, Line 19, -- . -- should be inserted between "coating" and "On series A"

In Column 13, Line 12, -- . -- should be inserted between "surface" and "Resis-"

Signed and Sealed this
Eighteenth Day of May, 2021



Drew Hirshfeld
*Performing the Functions and Duties of the
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office*