

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

POSCO CO., LTD.,
Petitioner,

v.

ARCELORMITTAL,
Patent Owner.

Case IPR2025-00370
Patent 10,961,602

**PETITIONER'S REPLY TO PATENT OWNER'S
RESPONSE TO PETITION**

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EX-1006-1013	[Reserved]
EX-1014	Cornette et al., “High Strength Steels for Automotive Safety Parts,” SAE Technical Paper Series 2001-01-0078 (2001) (“Cornette”)
EX-1015	Declaration of Mel DeSart
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EX-1017	Japanese Patent No. JP3738754
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EX-1019	Hein et al., “Hot Stamping of USIBOR 1500 P: Part and Process Analysis Based on Numerical Simulation” (2006) (“Hein”)
EX-1020	[Reserved]

EX-1021	Vaissiere et al., “Development of Pre-Coated Boron Steel for Applications on PSA Peugeot Citroën and RENAULT Bodies in White,” SAE Technical Paper Series 2002-01-2048, reprinted from the Proceedings of the 2002 SAE International Body Engineering Conference and Automotive & Transportation Technology Conference (2002) (“Vaissiere”)
EX-1022	Declaration of June Ann Munford - #1
EX-1023	U.S. Patent No. 6,296,805 (“Laurent”)
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EX-1033	Japanese Patent Publication JP2004244704
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EX-1038	Winkel, “Quenches for press hardening steel plate in the car industry” (2004)
EX-1039	Translation of EX-1038 and Certification of Accuracy
EX-1040-1046	[Reserved]
EX-1047	Eriksson et al., “Testing and evaluation of material data for analysis of forming and hardening of boron steel components,” Modelling Simul. Mater. Sci. Eng. 10 277 (2002)
EX-1048	[Reserved]
EX-1049	WO Patent Application Publication No. 2004/106573
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EX-1051	Ahindra Ghosh, “Secondary Steelmaking, Principles and Applications” (2001)
EX-1052	U.S. Patent Publication No. 2004/0238080
EX-1053	M. Suehiro, et al, “Properties of Aluminum-coated Steels for Hot-forming,” Nippon Steel Technical Report No. 88, July 2003
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EX-1056	J.-P. Laurent, “Hot formed Pre-coated boron steels: A solution of the resistance-formability’s dilemma?” 1 st European

Conference of Experts, Hot Forming and Casting Technologies
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EX-1057	OPPOSITION TO RESPONDENTS' MOTION TO COMPEL OR IN THE ALTERNATIVE TO STRIKE, <i>Certain High-Strength Aluminum or Aluminum Alloy-Coated Steel, and Automotive Products and Automobiles Containing Same</i> , Inv. No. 337-TA-1402 (ITC) (December 2, 2024)
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Capture of
https://automotive.arcelormittal.com/news_and_stories/cases/2019Usibor20years (captured February 25, 2026)

Petitioner submits this Reply to Patent Owner's ("PO") Response ("POR").

I. THERE IS NO BASIS FOR IMPORTING "DEFINED STOICHIOMETRY" AND "ORDERED CRYSTAL STRUCTURE" INTO THE TERM "INTERMETALLIC LAYER"

The Specification, claims, and prosecution history provide no descriptions, recitations, or discussion relating to "defined stoichiometry" or "ordered crystal structure" of an intermetallic layer. EX-1075, 4-15. Despite this, the POR argues that that these terms should be read into the claimed "intermetallic layer." POR, 9. This construction should be rejected.

A. PO's "defined stoichiometry" and "ordered crystal structure" requirements are unsupported by the claims

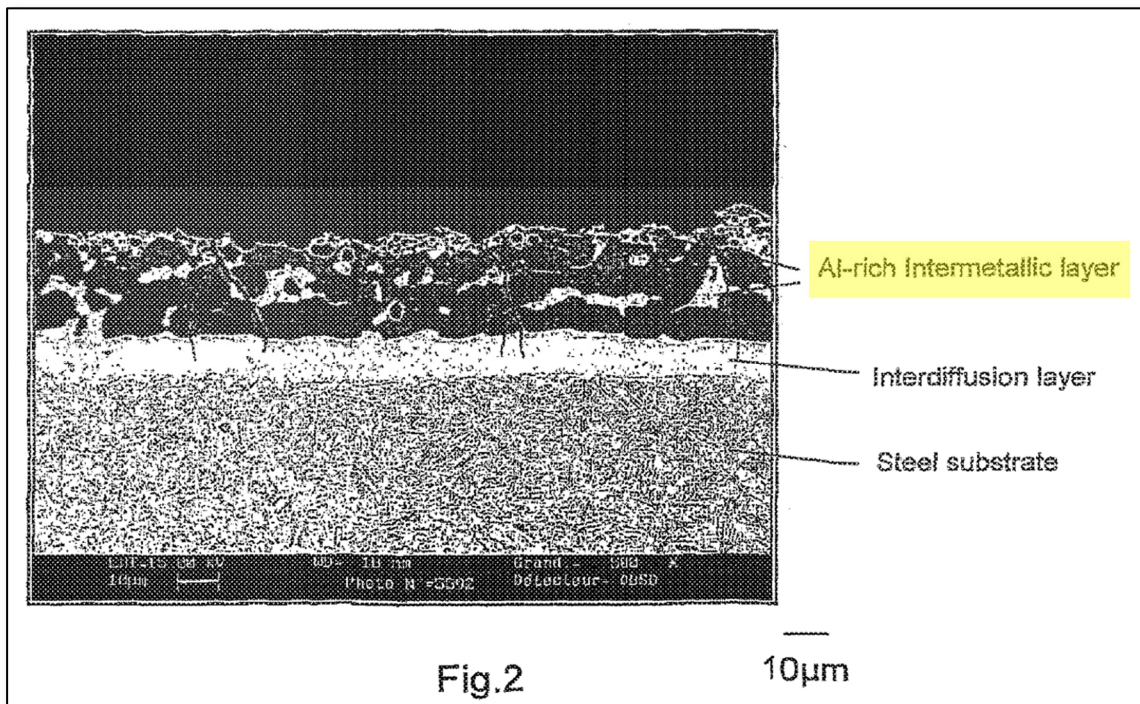
None of the claims mention "defined stoichiometry" or "ordered crystal structure" for the "intermetallic layer." EX-1001, claims 1-30. The sole limitations on the "intermetallic layer" relate to composition and morphology and do not imply, or even relate to, the presence of a "defined stoichiometry" or an "ordered crystal structure." EX-1075, 5-10.

B. PO's "intermetallic layer" construction is inconsistent with the Specification

The Specification does not merely fail to support PO's proposed construction—it *directly contradicts* it. A construction that is inconsistent with the Specification's usage of a term must be rejected. *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003).

Dr. Raabe alleges that “Figure 2” of the ’602 Patent “does not show an intermetallic layer as required by the Challenged Claims.” EX-2040, 60. He confirmed this conclusion during deposition. EX-1078, 129:21-24.

But FIG. 2 of the ’602 Patent shows an “intermetallic layer,” as illustrated in FIG. 2 below (annotated with highlighting):



’602 Patent, FIG. 2

The Specification elsewhere explicitly discusses the presence of an “intermetallic layer” in FIG. 2 (“This succession of layers (interdiffusion layer and intermetallic layer) yields inferior results....”). EX-1001, 3:57-61.

Thus, by Dr. Raabe’s own admission, his proposed construction of “intermetallic layer” is inconsistent with usage of that term in the Specification. A construction that is inconsistent with the Specification cannot be accepted. *Merck &*

Co. at 1371; *Key Pharms. v. Hercon Lab'ys Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998); *Regeneron Pharms., Inc. v. Mylan Pharms. Inc.*, 130 F.4th 1372, 1381 (Fed. Cir. 2025).

More, the Specification uses the term “intermetallic” in a broad, general manner, consistent with its usage in the art as discussed below in §I.D, and ***inconsistent*** with the narrow construction proposed by PO. EX-1075, 14. For example, the Specification refers generally to “alloying of the pre-coating with the steel substrate, which has the effect of creating intermetallic alloys,” ***without*** relating these “intermetallic” alloys to a specific layer or discussing any “defined stoichiometry” or “ordered crystal structure.” EX-1001, 1:50-52, 5:57-58; EX-1075, 14. And the '602 Patent is similarly silent as to the measurement methods that, Dr. Raabe alleges, would be required in order to identify an “intermetallic layer” in Takagi. EX-2040, 134; EX-1075, 13-15. Thus, the Specification provides no basis for PO’s construction. EX-1075, 11-15

C. PO’s construction is inconsistent with previous conclusions by Dr. Raabe and PO’s other expert

PO, citing Dr. Raabe, alleges that “Takagi lacks sufficient information to determine whether there is an intermetallic layer.” POR, 12-13; EX-2040, 134; EX-1075, 16-17. But this contradicts Dr. Raabe’s previous discussion of Takagi.

In prior IPR proceedings for the '602 Patent, Dr. Raabe referred to “the intermetallic phase layering and structure in Takagi.” EX-1076, 166. That is, in the

present IPR, Dr. Raabe states a POSITA would be unable to identify intermetallic layers in Takagi. EX-2040, 134. But, in the prior IPR, Dr. Raabe readily identified Takagi's "*intermetallic* phase layering and structure." EX-1076, 166; EX-1075, 17. This about-face suggests that Dr. Raabe's present testimony should not be credited.

Expert testimony submitted by PO in a different prior IPR also contradicts Dr. Raabe's conclusion. In the IPR that invalidated related Patent No. 9,708,683 ("the '683 Patent"), PO's expert Dr. Anthony Deardo confirmed a definition of "intermetallic layer" as a "layer that contains a compound of two different metals" (or "a series of compounds") "in a matrix." EX-1077, 107:18-108:1, 109:15-20. Notably, Dr. Deardo never mentioned "defined stoichiometry" or "ordered crystal structure" when testifying about a POSITA's understanding of an intermetallic layer. EX-1077; EX-1075, 18.

D. PO's "intermetallic layer" construction is inconsistent with usage of that term in the art

To support his construction, Dr. Raabe cites three textbooks. EX-2040, 118; EX-2037-39. But these textbooks do not support the construction and, in fact, are inconsistent with it. EX-1075, 19.

Each of the cited textbooks (EX-2037, EX-2038, EX-2039) is related generally to intermetallics. None of them, however, even discusses hot-stamping, as Dr. Raabe conceded. EX-1078, 110:19-23; EX-1075, 20-21. But claims must be construed in the context of the specific art in question—i.e., in the context of hot-

stamped, coated steel, not generic chemistry. *Vanderlande Indus. Nederland BV v. I.T.C.*, 366 F.3d 1311, 1321 (Fed. Cir. 2004).

Thus, the most relevant documents for construing “intermetallic layer” are not generalist textbooks but publications in the specific field of hot-stamping. Those publications use the term “intermetallic” to refer to layers, coatings, and compounds formed during the hot-stamping process, without reference to a “defined stoichiometry” or “ordered crystal structure.” EX-1075, 22.

For example, Suehiro '073 uses the term “intermetallic compound” to refer to the entire “alloyed aluminum-system plated layer” that can include “one to five phases” that “form a multi-layered structure.” EX-1035, 5:19-21, 14:30-32, 28:15-19. Thus, Suehiro '073 uses the term “intermetallic compound” to refer to the entire multi-layer coating formed by hot-stamping. EX-1075, 23. Similarly, FR2833504 refers to “an intermetallic alloy” formed “[w]hen the sheet metal blank is reheated” (in standard hot-stamping). EX-1025, 7:17-20. “Hot Stamping of USIBOR 1500” refers to “the intermetallic alloying reaction between the AlSi-coating and the iron substrate.” EX-1019, 6. None of these documents use the term “intermetallic” in the manner proposed by PO. EX-1075, 23.

Even taken on their own terms, the textbooks cited by Dr. Raabe do not support his construction. EX-1075, 24. His specific definition is not drawn directly from any of the textbooks but, rather, represents his attempt to “condense” them

“into a high level version” and “translat[e] from three or four textbooks...into a wording at a high level.” EX-1078, 112:20-21, 113, 14-16. Indeed, a first of the textbooks emphasizes the difficulty of defining “intermetallic,” noting that “IUPAC recommendations...do not even define the term ‘intermetallic compound.’” EX-2037, 17; EX-1075, 26. Another of the textbooks provides an explicit definition that does not include a “defined stoichiometry” or “ordered crystal structure.” EX-2038, 11; EX-1075, 25.

Worse for PO’s position, the first textbook refers to “amorphous intermetallic phases.” EX-2037, 452. As Dr. Raabe explained during deposition, “[a]morphous means you don’t have crystal structure.” EX-1078, 116:18-19. So, although Dr. Raabe argues that an “intermetallic layer” must have an “ordered crystal structure,” he cites a textbook discussing “intermetallic phases” that “don’t have crystal structure.” EX-2040, 120; EX-2037, 452; EX-1078, 116:18-19; EX-1075, 27.

Even a generalist approach does not support PO’s position. In the ’683 Patent’s IPR, the petitioner cited a dictionary definition of “intermetallic” as “composed of two or more metals or of a metal and a nonmetal in an alloy,” and this construction was not disputed by PO. EX-1031, 24; EX-1079, 3; EX-1071; EX-1081; EX-1075, 28.

E. PO's "intermetallic layer" construction would contradict the Board's prior decision

The Final Written Decision in an IPR for the '683 Patent, a parent to the '602 Patent, found claim 1 (reciting "an intermetallic layer") unpatentable over Cornette. EX-1028, claim 1; EX-1029, 50. This decision is inconsistent with PO's construction of "intermetallic layer." POR, 10, 12-13, 22-23; EX-2040, 119, 127, 134; EX-1014; EX-1075, 29-31.

Dr. Raabe argues that "Cornette thus neither discloses nor provides any data or testing to conclude that an intermetallic layer as required by the Challenged claims was present there." EX-2040, 136. This is in direct contradiction to the Board's prior finding that "Cornette discloses a coating comprising...an Intermetallic layer," which Dr. Raabe admitted during deposition. EX-1029, 39; EX-1078, 138:6-144:18 ("yes, this is inconsistent with what I say").

The Board did not construe "intermetallic" in the prior IPR. EX-1029, 22-23. Nevertheless, PO's current position is irreconcilable with the Board's decision. If PO believed that an "intermetallic layer" must have a "defined stoichiometry" and an "ordered crystal structure," it was afforded many prior opportunities to present such a construction. It did not. EX-1029; EX-1002; EX-1076. The Board should not now commit to a construction that would unsettle the Board's previous determination. *Papst Licensing GMBH & Co. KG v. Samsung Elecs. Am., Inc.*, 924 F.3d 1243, 1252 (Fed. Cir. 2019)(applying issue preclusion). Indeed, per USPTO

rules, PO “is precluded from taking action inconsistent with the adverse judgment” in the ’683 Patent’s IPR. 37 CFR § 42.73(d)(3). By failing to abide by the Board’s prior decision and arguing that Cornette lacks an intermetallic layer, PO has run afoul of USPTO rules. Thus, PO should drop its construction and, if unwilling, the Board should reject it.

F. Takagi and Suehiro each disclose an “intermetallic layer”

Even if PO’s construction is adopted, Takagi and Suehiro each disclose an “intermetallic layer.” EX-1075, 32.

Takagi discloses layers composed of intermetallic compounds. Specifically, Takagi describes that, during coating formation, “mutual diffusion...produces various Al-Si-Fe ternary intermetallic compounds...The Al-Si-Fe alloy layer formed by the heat treatment has a layered structure made up of these intermetallic compounds.” EX-1016, [0016]. The cited layers of Takagi are part of this “layered structure,” are “made up of...intermetallic compounds,” and are thus “intermetallic layers.” EX-1075, 33. PO’s statement that “Takagi does not identify any layer as intermetallic with a label” misses the point: while Takagi may not specifically use a “label”, Takagi unmistakably discloses layers composed of “intermetallic compounds.” POR, 13; EX-1075, 34. That Takagi “reports no [] testing” like “x-ray diffraction...or electron backscatter diffraction...to verify the presence and ordering

of intermetallic compounds” is immaterial: the ’602 Patent reports no such testing, either. EX-1001; POR, 12-13; EX-1075, 34.

Suehiro does not use the term “intermetallic.” EX-1055. However, in view of the widespread disclosure in the art that hot-stamping processes like Suehiro’s give rise to coatings described as “intermetallic,” a POSITA would have understood that Suehiro’s layer (2) is an intermetallic layer, as applied in the Petition. Petition, 65; EX-1035, 5:16-21; EX-1016, [0026]; EX-1025, 7:17-18; EX-1019, 6; EX-1034, [0005]-[0006]; EX-1075, 35.

II. THE ART IS ENABLING AND WOULD HAVE LED A POSITA TO OBTAIN THE CLAIMED COATINGS WITH A REASONABLE EXPECTATION OF SUCCESS

In PO’s telling, the hot-stamping process is so complex that, even with the benefit of the prior art, a POSITA would not have been able to obtain the claimed coatings. POR, 35-50. PO asserts that Takagi is not even enabling for its own examples. POR, 12-22.

But this is not so. In fact, the prior art provides essentially the same level of disclosure as the ’602 Patent itself.

A. The art’s process parameters match those of the ’602 Patent

The ’602 Patent provides target ranges for several different process parameters. But the values disclosed in the ’602 Patent *match values disclosed in the art*. A full set of comparative process parameters is shown in the table below. As

illustrated, Takagi's disclosed values are in, or overlap with, the '602 Patent's target range for *every process parameter*. EX-1075, 36-37. Suehiro is silent as to pre-coating thickness but otherwise discloses process parameters that match the '602 Patent's. EX-1001, 5:9-14, 6:63-7:1, 7:12-14, 7:41-43, 7:46-50, 11:12-14, 11:54-62, 12:32-39; EX-1016, [0026]-[0028], [0033]-[0035], [0037], FIG. 4; EX-1014, 9; EX-1055, [02], [07], [09], [14]-[15], [18], FIG. 3.

Parameter	'602 Patent	'602 Patent Example 2	Takagi	Cornette	Suehiro
Pre-coating thickness (μm)	20 – 33	20 – 33	10 – 20	25	---
Heating rate (°C/s)	4 - 12	10	8; 1-10	---	~8 ¹ , 10
Temperature (°C)	880 - 940	920	900, 920, 950	880-950; 900	900, 950
Hold time (min)	< 3 – 13	< 6	3, 4, 5; 2-8; 2-10	< ² 5 – 10; 5	0.5; 3
Cooling rate (°C/s)	> 30, or > 50	---	20 – 100; 30	---	> 20, > 30
Steel sheet thickness (mm)	0.7 - 3	1.2	1.4	---	1.4, 1.6
Si% in pre-coating (%)	5 - 11	9.3	5	---	10

Thus, Takagi and Suehiro each provide essentially the same target parameter values as the '602 Patent, as conceded by PO's expert during deposition. *See* §II.E below. EX-1078, 144:24-158:14.

¹ Based on “2 min” heating time to reach “950°C”. EX-1055, [14].

² “<” in this table indicates that the disclosed time includes both the heating ramp-up time and the hold time, where a specific hold time is not provided.

B. The level of skill suggested by the '602 Patent would have enabled a POSITA to implement the claimed coatings

In this context, it is not tenable to assert, as PO does, that “an extensive and undue amount of experimentation would be required to create a part with the interdiffusion phase layers reflected in Takagi.” POR, 21. Takagi and Suehiro each provide detailed disclosure that agrees quantitatively with the disclosure in the '602 Patent. To the extent the '602 Patent is enabling, then the art is enabling and a POSITA would have had a reasonable expectation of success in implementing the claimed coatings.

That is, PO's position is that a POSITA is enabled to obtain the claimed coatings based on the '602 Patent's target parameter ranges. POR, 34; EX-2040, 65; EX-1078, 23:11-24:1. Since Takagi and Suehiro provide matching or similar values for the same process parameters, it follows that a POSITA would have had a reasonable expectation of success based on Takagi or Suehiro, with the further addition of GMW1440 or Cornette to teach the use of a thicker pre-coating. The same knowledge and skill that the '602 Patent relied on for its disclosure informs the assessment of the prior art in evaluating obviousness. A finding otherwise would require the art to show more than the '602 Patent itself discloses. *In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994); *In re Publicover*, 813 F. App'x 527, 532 (Fed. Cir. 2020). PO's arguments focusing on the Petition's definition of a POSITA are

unavailing, because PO argues that the '602 Patent is enabled based on the same definition. POR, 4-5, 8, 18-19, 34; EX-2040, 65; EX-1078, 23:11-24:1

C. Allegedly-critical parameters missing from the art are also missing from the '602 Patent

Faced with the foregoing quantitative agreement, and matching level of detail, between the '602 Patent and the art, PO cites *additional* process parameters that, according to PO, a POSITA would have to be told in order to manufacture the claimed coatings. EX-2040, 45, 146, 218-219; POR, 39, 47; EX-1075, 38.

But the '602 Patent is silent as to these parameters. EX-1001; EX-1075, 39. For example, despite initially stating that “[t]he '602 patent is mentioning that you have to take into consideration the dewpoint,” Dr. Raabe was unable to identify that disclosure during deposition. EX-1078, 55:15-16, 56:2-3, 57:3-8. He eventually agreed that a POSITA would have been able to select a suitable dew point based on existing knowledge in the art, pointing specifically to the “References Cited” section of the '602 Patent. EX-1078, 57:3-59:9.

Other parameters cited by PO (such as heating stage details, “mass,” “stamping contact time,” and atmosphere) are also undiscussed by the '602 Patent and do not support PO's position, either. EX-1001; EX-2040, 52, 75, 94, 146-147; EX-1078, 28:3-9, 39:22-42:18; EX-1075, 39.

These absences, in combination with the art's close agreement for parameters that *are* disclosed, indicate that a POSITA would have been capable of selecting

proper values to obtain desired coating and steel characteristics. EX-1075, 40. *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1339 (Fed. Cir. 2020).

D. Other parameters cited by PO do not support their position

Dr. Raabe additionally raised “formability,” “adherence,” “fouling,” and “transfer time.” EX-1078, 59:13-16, 65:4-7, 67:7-16. However, he acknowledged that “formability,” “adherence,” and “fouling” were the results of processing rather than processing parameters. EX-1078, 66:14-17, 67:17-24. And Dr. Raabe also acknowledged that a POSITA would have known the negative effect of a high transfer time, as taught by the ’602 Patent. EX-1078, 71:19-72:8; EX-1075, 41-42. Similarly, “Kirkendall porosity,” raised by Dr. Raabe, is entirely undiscussed by the ’602 Patent and, like the factors above, is a result of processing, not a processing parameter. EX-1078, 74-75, 232-233; EX-1075, 41.

E. The art is enabled and would have led a POSITA to obtain the claimed coatings with a reasonable expectation of success

In sum, relevant process parameters are either taught by Takagi and Suehiro with values similar to the values disclosed in the ’602 Patent, or are absent from both the art and the ’602 Patent. EX-1075, 36-42. During Dr. Raabe’s deposition, a set of “eight process parameters” was discussed. EX-1078, 52:7-55:7, 144:24-158:14. For each of these parameters, Dr. Raabe conceded that Takagi’s values were “similar” to, included the same value as, or “overlap[ped]” with, the values of the ’602 Patent. EX-1078, 144:24-158:14. Of the remaining parameters raised by Dr. Raabe, all

except one are either mutually undiscussed by the '602 Patent and the art, or are processing results rather than processing parameters. EX-1078, 39:22-42:18, 55:15-16, 56:2-3, 57:3-8, 66:14-17, 67:17-24; EX-1075, 36-42. The exception, “transfer time,” corresponds merely to the idea that heated steel should be transferred quickly from the furnace to the stamping press, and Dr. Raabe conceded a POSITA’s existing motivation to reduce that value. EX-1001, 10:58-64; EX-1078, 71:19-72:8; EX-1075, 42.

It is therefore not credible to argue, as PO does, that the '602 Patent is enabling while the prior art is not, or that the '602 Patent’s disclosures are sufficient to obtain the claimed four-layer coating while the art’s very similar disclosures are not. Dr. Raabe provided his opinion that “the term undue experimentation would mean that a description is maybe so far off to bring you close to the target described in the patent claims that you might maybe have to translate this into maybe several persons and years and laboratory tests and so on.” EX-1078, 275:20-25. But the art is not “so far off”—it is exactly on target.

III. A POSITA WOULD HAVE BEEN MOTIVATED IN SEEKING AND HAD A REASONABLE EXPECTATION OF SUCCESS IN ACHIEVING THE CLAIMED COATING THICKNESS

A. GMW14400 and Cornette provide strong motivation for achieving the claimed coating thickness

The Petition cites GMW14400 (EX-1026) to argue that a POSITA would have identified “strong market motivation and demand to achieve” a coating thickness

“>35” μm in order to satisfy GM’s requirements. Petition, 52-53; EX-1026, 7; EX-1003, 118-122. In response, PO cites “manufacturing and technical reasons why one would not have been motivated to obtain a...thickness of greater than 30 μm .” POR, 29-34.

Even if PO’s statements about manufacturing challenges are taken at face value, they do not detract from the strong motivation provided by GMW14400. GMW14400 “covers the requirements for low carbon, heat-treatable boron steel used in the manufacture of structural parts requiring heat treatments to achieve high strength.” EX-1026, 1. The cited parameters are “specific requirements for material on delivery.” EX-1026, 2. GMW14400 was intended to be adhered to by suppliers to General Motors: the standard discusses that “[t]he approval of suppliers to this specification will be executed by the authorized Materials Engineering departments.” EX-1026, 4-5.

Thus, GMW14400 self-evidently provides a strong motivation to comply with General Motors’ requirements and provide a coating thickness greater than 35 μm . As Dr. Miles explained, “steel researchers and manufacturers would have been highly motivated to conform to General Motors’ requirements. It would have been typical for a researcher in industry or academia to review standards such as GMW14400 to learn about industrial objectives and steel processing, for example, in order to guide internal design and research.” EX-1003, 121.

PO even appears to concede that someone “required by GM as a contracted supplier” *would* be motivated to achieve this coating thickness, but dismisses this conclusion because this “is not the position a POSITA would be in.” POR, 33. But whether someone is a “contracted supplier” to General Motors is outside the scope of a POSITA definition. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986). And, in any case, a POSITA possesses “full knowledge...of the prior art in the field of his endeavor,” which for the field of metallurgy would have included GMW14400’s indication of market demand. *Application of Winslow*, 365 F.2d 1017, 1020 (C.C.P.A. 1966); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007).

Against this strong motivation, PO’s alleged disadvantages of a thicker coating hold little weight, because a POSITA is able to weigh benefits against one another, and disadvantages need not obviate a motivation to combine. *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006).

Cornette also motivates a coating thickness greater than 30 micrometers. As discussed by Dr. Miles, Cornette “notes that ‘[t]he average [pre-coating] layer thickness showing the best compromise between corrosion protection and weldability is 25 μm ’ and links this ‘best’ pre-coating thickness to a ‘typical’ thickness of the alloyed ‘Fe-Al-Si’ layer of ‘about 40 μm at the steel surface.’” EX-1003, 29; EX-1014, 9. PO asserts that “Dr. Miles simply rewrites Cornette’s

disclosure.” POR, 32. Not so: Dr. Miles’ summary is the best and only accurate interpretation of Cornette’s description, because, as he explains, PO’s interpretation “requires Cornette to zig-zag back and forth in time in the hot-stamping process” without the discussion that a POSITA would have expected. EX-1075, 43-47.

B. A POSITA would have been motivated to achieve the claimed coating thickness in combination with the claimed layer structure

PO argues that “even if a POSITA would have been motivated to seek a greater thickness, there is no reason a POSITA would have tried to do so while maintaining the claimed structure or composition of Takagi or Suehiro, which was not required of the GM specification.” POR, 33.

But this statement ignores Takagi’s disclosures, which would have motivated a POSITA to achieve the claimed multi-layer structure even absent a corresponding teaching in GMW14400. EX-1075, 48-49. As Dr. Miles notes, Takagi discloses that its “layered structure...offers advantages of formability, corrosion resistance and weldability.” EX-1016, [0016]; EX-1003, 23. Indeed, Takagi’s Table 1 notes that the cited Nos. 1, 4, and 5 coatings each provide effective formability, corrosion resistance, and weldability. EX-1016, Table 1. Takagi also discusses how the specific layer compositions and arrangements cited in the Petition are advantageous. EX-1016, [0017], [0020], [0024], [0025]; EX-1075, 49. These disclosures provide strong support for Dr. Miles’ finding that the asserted combinations of Takagi with

GMW14400 and Cornette, including both the claimed coating thickness and the claimed layer structure, would have been obvious. EX-1003, 23-35, 79-81.

C. PO's alleged unpredictability of coating thickness adjustment is undercut by the '602 Patent

In addition to general arguments relating to enablement and alleged undue experimentation (addressed above in §II), PO argues that modifying the coating thickness to achieve a “thickness greater than 30 micrometers,” while retaining the other claimed coating characteristics, would not have been achievable with a reasonable expectation of success. POR, 35, 40-45, 49-50.

But the '602 Patent itself suggests the opposite. The '602 Patent discloses only a broad range of pre-coating thickness, without the specificity that PO argues a POSITA would have required in order to achieve the claimed coatings. EX-1075, 51.

Specifically, the '602 Patent discloses that “the thickness [] of the pre-coating is preferably from 20-33 micrometers,” without more specific disclosure. EX-1001, 5:17-18; EX-1075, 52-53. And Dr. Raabe attests that a POSITA “start[ing] with” this range would be enabled. EX-1078, 78:22-23, 81:7-15.

That is, Dr. Raabe's position is that it would have been within the skill of a POSITA to achieve the claimed coatings provided with only (i) a broad “starting” range of pre-coating thickness and (ii) the other process parameters discussed by the '602 Patent. EX-1075, 54. But, as discussed in §II above, the art teaches essentially

the same process parameter values disclosed by the '602 Patent. Further, the art teaches pre-coating thicknesses matching those of the '602 Patent: GMW14400's pre-coating thickness range of "20 to 33" μm *exactly matches* the '602 Patent's range, and Cornette discloses a 25 μm pre-coating thickness. EX-1016, 7; EX-1014, 9; EX-1003, 29. It follows that a POSITA, motivated by GMW14400 and Cornette as discussed above, would have had a reasonable expectation of success in selecting a suitable pre-coating thickness to obtain the claimed coating thickness. EX-1003, 28-40.

D. Takagi's 20 micrometer pre-coating would provide a coating thickness greater than 30 micrometers.

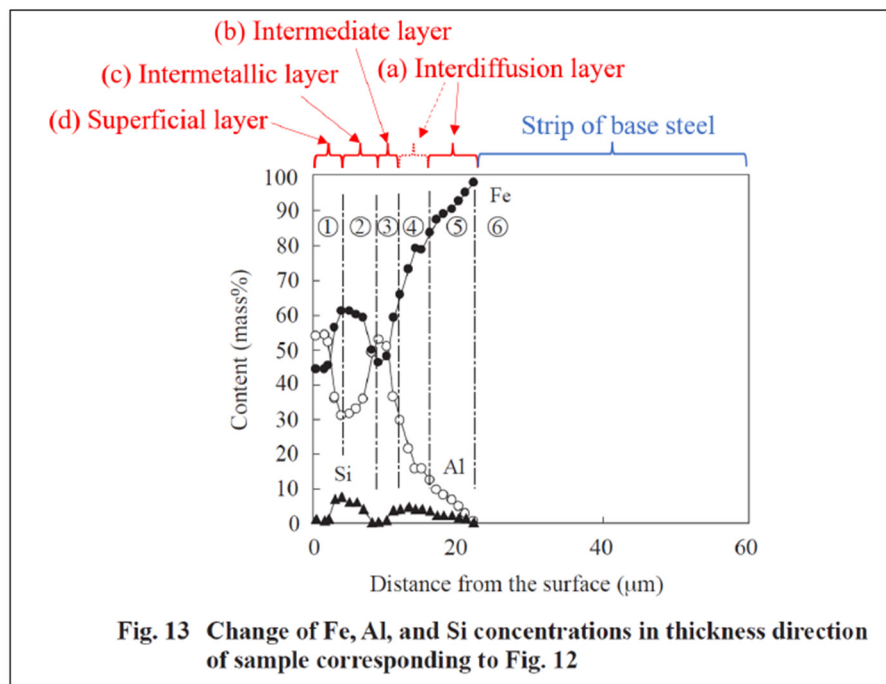
PO's arguments regarding modifying coating thickness are also insufficient, because Takagi's "20 μm " pre-coating thickness would have resulted in a coating thickness greater than 30 μm , even absent modification. EX-1016, [0035]; Petition, 11-12; EX-1003, 28. For example, GMW14400 teaches using a "20 to 33" μm pre-coating to obtain a coating "> 35 μm ," and Dr. Raabe confirmed a "link" between "the precoating range which is 20 to 33" and "a final coating thickness which must be greater than 30 microns." EX-1026, 7; EX-1078, 87:9-16. Similarly, Cornette discloses using a 25 micrometer pre-coating thickness to obtain a 40 micrometer coating, and FR2833504 describes a "50% increase" in coating thickness compared to pre-coating thickness. EX-1014, 9; EX-1025, 5:17-20; EX-1003, 28. The '602 Patent and GMW14400 teach the *same exact* pre-coating thickness range, down to

the micron, which the art indicates would result in a coating thickness satisfying the claims. EX-1001, 11:60-62; EX-1026, 7; EX-1003, 28.

IV. SUEHIRO DISCLOSES A “SUPERFICIAL LAYER”

PO alleges that “there is a layer above what [Dr. Miles] and the Petition identify as allegedly being the claimed superficial layer.” POR, 25. Thus, PO argues, Suehiro’s “layer (1) is not and cannot be the superficial layer because it is not in the superficial (i.e., surface) layer position in Suehiro’s SEM.” POR, 24.

But PO’s focus on Suehiro FIG. 12 is mistaken. As shown in the annotated version of Suehiro FIG. 13 below, the Petition’s claim 1 discussion clearly mapped the superficial layer to the outermost layer (1) in Suehiro’s coating. Petition, 64-65.



Suehiro, FIG. 13

Suehiro's FIG. 13 unmistakably shows that layer (1) is a superficial layer, because layer (1) is the layer present at the surface (i.e., having a "Distance from the surface" of "0" in FIG. 13). EX-1075, 60. Note, too, Suehiro's accompanying description that "the alloy phase consists of five layers." EX-1055, [15]. All five layers are accounted for in FIG. 13 (layers (1)-(5)), and layer (1) is both the outermost one and present at "the surface." PO's argument—essentially, that the annotation in FIG. 12 points to the wrong layer—cannot detract from this independent, cited disclosure of a "superficial layer." EX-1075, 61.

V. GMW14400, SUEHIRO, AND CORNETTE ARE PRIOR ART

A. GMW14400

The Petition cites a declaration from a representative of Accuris/IHS Global Engineering Documents, the standards provider for GMW14400. Petition, 2; EX-1027, 26-27. The declaration stated that "the 'GMW14400' document has been listed in our database and available to the public for purchase online since December 1, 2005." *Id.* Ms. Munford also cited webpage captures showing indexing and search functionality on IHS's homepage, "global.ihs.com." EX-1027, 30.

PO argues that "Petitioner never identified any basis why a POSITA would have known to look to" IHS for GMW14400. POR, 53. Similarly, PO argues that a POSITA would not have known about "global.ihs.com." POR, 54; EX-1027, 9-14.

But the IHS Standards Store was not a private or obscure source: it was a well-known provider of standards for many different companies, organizations, and government agencies. EX-1082, 45. A rebuttal declaration from Ms. Munford (EX-1082) identifies the following:

1. “HOW TO GET IT,” a 1998 librarian’s “reference tool to identify and/or obtain” various types of documents. EX-1082, 39-45. This book includes several specific references to “global.ihs.com,” including a comment that Global Engineering, accessible at “global.ihs.com”, “has exclusive distribution contracts with...GM [General Motors].” EX-1082, 43.
2. An Internet Archive capture of the University of Washington’s “Engineering Standards Database Search” webpage, which, as captured in August and December 2005, included a direct link to “global.ihs.com.” EX-1082, 46.

These documents demonstrate public knowledge of IHS (and “global.ihs.com”) as a go-to source for standards.

PO also argues that the archived webpages cited by Ms. Munford “are from 2003, years before GMW14400 allegedly became publicly available.” POR, 55. Ms. Munford’s declaration provides a webpage capture from April 2006, showing the same search and indexing features that were in the July 2003 capture. EX-1082, 47-

48. There is no reason to believe that these features would have been present in July 2003, removed before December 2005, and then re-added before April 2006.

The evidence demonstrates that an interested POSITA would have been able to locate IHS's website and, from there, use the website's search and indexing functionality to locate GMW14400. EX-1082, 33-48.

B. Suehiro

PO also disputes the public availability of Suehiro. POR, 55-56. Ms. Munford's declaration cites the following, among other documents:

1. A series of archived webpages illustrating how an interested person could, with only three clicks, navigate from (1) the Nippon Steel homepage, to (2) Nippon Steel's R&D page, to (3) a table of contents providing a link to access Suehiro itself, labeled with Suehiro's title. EX-1082, 9-17.
2. Library records from the National Diet Library in Japan illustrating that Suehiro was received, indexed, and added to the library's collection in 2003. EX-1082, 19-24.

These documents are in addition to other markers of public accessibility, such as the "2003" date on the face of the document, its inclusion of a Universal Decimal Classification (UDC) code for indexing, and the long-running nature of its journal. EX-1082, 26-30. The record demonstrates public accessibility. EX-1082, 7-32;

Telefonaktiebolaget LM Ericsson v. TCL Corp., 941 F.3d 1341, 1347 (Fed. Cir. 2019).

C. Cornette

The Petition cites a declaration by Mel DeSart. EX-1015, 1. This declaration attests that Cornette “was publicly available at the Library within a few weeks of March 13, 2001.” *Id.* Mr. DeSart cites personal knowledge that “[o]nce a paper is stamped, it is routed to the Library for shelving.” *Id.*

PO alleges that the paper being “shelv[ed]” does not indicate indexing or cataloguing. POR, 56-57.

First, in focusing on “shelving,” PO ignores the direct statement by Mr. DeSart that Cornette was “publicly available.” EX-1015, 1.

Second, the “shelving” of an edition of a long-running publication (like Cornette’s) in a publicly-accessible library is demonstrative of public accessibility. *Telefonaktiebolaget LM Ericsson* at 1346-1347.

Further, Ms. Munford explains that PO’s position “misconstrues [Mr. DeSart’s] declaration,” and that, in the context of library practice, Mr. DeSart’s reference to “shelving” is indicative of cataloguing and public accessibility. EX-1082, 51-72.

Further, Cornette was already accepted as prior art in IPR2019-01275. EX-1029, 28-50. PO estoppel precludes PO's arguments against Cornette's prior art status, and the Board should reject them. 37 CFR § 42.73(d)(3).

VI. PO'S "SECONDARY CONSIDERATIONS" ARGUMENTS ARE UNAVAILING

PO argues that a "timeline—the invention and subsequent sales of USIBOR" reflect commercial success. POR, 57-59. But, as PO concedes, USIBOR steel does not itself embody, and is not coextensive with, the claims: it is "a base-steel component in practicing the Challenged Claims." POR, 58. That is, USIBOR must be hot-stamped in a specific manner to obtain the claimed products. EX-2011, 165:8-14. As PO itself promotes, USIBOR was invented by Jean-Pierre Laurent, not the inventors of the '602 patent. EX-1083.

Also, PO makes no attempt to establish nexus. The POR does not attempt to map any of PO's commercial products to the claims. PO has not demonstrated that the alleged increased sales of USIBOR were related to the claimed product. PO cites only statements referring generally to "the four layers" or "material pertaining to these claims," without reference to the specific elements of the claims. EX-2011, 139:22-140:6; EX-1012, 110:1-14; *Application of Tiffin*, 448 F.2d 791, 792 (C.C.P.A. 1971). With this treatment, PO has left the record without any evidence that could demonstrate the nexus needed to establish secondary considerations.

Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (Fed. Cir. 1988).

VII. DEPENDENT CLAIMS 10, 12, AND 19 ARE OBVIOUS

For claim 10 (“layer (a) has a thickness less than 10 micrometers”), the Petition cites Cornette’s disclosure of a layer (a) with “a measured thickness of 10.7 μm .” Petition, 37. As detailed, given the lack of criticality associated with 10 μm compared to 10.7 μm , the fact that this difference is within measurement tolerance, and the art’s recognition of layer (a) thickness as a tunable, result-effective variable, Takagi or Suehiro in view of Cornette render obvious claim 10. Petition, 37-39, 71; EX-1016, [0017], [0019]; EX-1003, 70-73, 164-165.

Dr. Raabe’s statements corroborate this view. During deposition, he indicated that claim 10 relates only to “minor thickness variation” that might “translate into minor chemical variations also,” which would “not be game changers.” EX-1078, 217:23-218:4; EX-1075, 62. This suggests that a POSITA would have been able to achieve the “less than 10 micrometers” thickness while also satisfying the composition limitations of claim 1. EX-1075, 62.

Claims 12 and 19 are similarly obvious. EX-1003, 77-81, 86-87, 168-169, 178. For example, Takagi’s Nos. 4 and 5 coatings deviate by only 1.1% in Al% or

0.5% in Si%, respectively.³ Petition, 40. And the art includes extensive recognition of elemental compositions (including Al% and Si%) as result-effective variables. Petition, 41; EX-1016, [0019]-[0021]; EX-1034, [0012]; EX-1035, 25:21-28, 29:3-7, 31:6-12; EX-1056, 7; EX-1003, 79. It would have been obvious to perform routine experimentation to vary the compositions and arrive at the claimed values, which are within manufacturing tolerances and would not have been expected to correspond to a qualitative difference in layer properties. EX-1003, 78-81; *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775 (Fed. Cir. 1985).

VIII. CONCLUSION

The Challenged Claims are unpatentable.

Respectfully submitted,

Dated: February 27, 2026

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³ Contrary to PO's arguments, Takagi clearly discloses mean compositional data.

POR, 13; EX-1075, 55-58.

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response totals 5,584 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1).

Dated: February 27, 2026

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(1) and 42.6(e)(4)(iii), the undersigned certifies that on February 27, 2026, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response and Accompanying Exhibits were provided by email to the Patent Owner by serving the email correspondence addresses of record as follows:

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