

EXHIBIT B-12

Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

U.S. Patent Publication No. US 2006/0185774 (“Nishibata”), published on August 24, 2006 from an application filed on November 28, 2005, qualifies as prior art under at least 35 U.S.C. §§ 102 and/or 103 for the asserted claims of U.S. Patent No. 10,961,602 (“the ’602 patent”), as discussed in detail in the claim chart below.

The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. As such, nothing in Respondents’ claim charts should be construed as an admission regarding infringement, either literally or under the doctrine of equivalents, or as an admission regarding Respondents’ understanding of the proper scope of the asserted claims. Respondents reserve the right to rely on additional citations or sources of evidence that also may be applicable, or that may become applicable in light of claim construction, changes in Complainant’s infringement contentions, and/or information obtained during discovery as the investigation progresses.

To the extent Complainant allege that Nishibata does not disclose any particular limitation of the asserted claims of the ’602 patent, either expressly or inherently, it would have been obvious to a person of ordinary skill in the art as of the priority date of the ’602 patent to modify Nishibata and/or to combine the teachings of Nishibata with other prior art references, including but not limited to other prior art references discussed in detail in this claim chart, the present prior art references cited in the Cover Pleading, and the relevant section(s) of claim charts for other prior art references for the ’602 patent in a manner that would have rendered the asserted claims invalid as obvious.

Respondents reserve the right to amend or supplement this claim chart at a later date as more fully set forth in the Cover Pleading.

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Claim 1	
[1pre] A precoated steel product comprising:	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. To the extent the preamble of claim 1 is found to be limiting, Nishibata and/or one or more prior art references disclose a precoated steel product. For example: “A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009]. “More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the

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	average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015].

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	“In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047] “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[1a] a strip of base steel having a first side and a second side; and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a strip of base steel having a first side and a second side. For example:

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	Punch Bottom Portion Central Portion of Side Wall Flange Portion Punch Die Forming Height Rp Rd Clearance Fig. 1 10 2 3 2 Fig. 2 “A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009].

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	“More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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	“In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015].
[1b] a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards:	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards. For example:

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	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is

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	reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content

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	is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053].

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	“FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[1c] (a) an interdiffusion layer having a first mean iron composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (a) an interdiffusion layer having a first mean iron composition. For example: Fig. 1 Fig. 2

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	According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent.

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	1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024]

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	“Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].

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	“In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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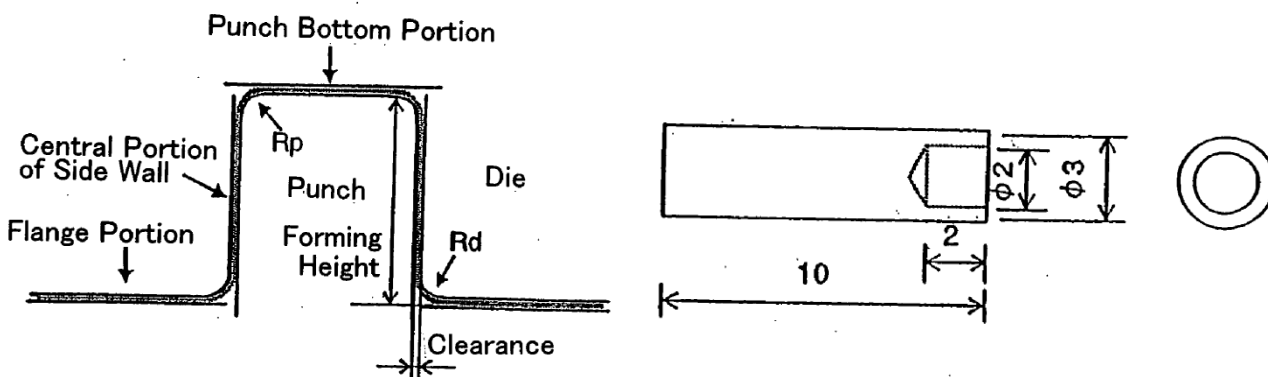
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	forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[1d] (b) an intermediate layer having a second mean iron composition different from the first mean iron composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (b) an intermediate layer having a second mean iron composition different from the first mean iron composition. For example:  Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the

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	average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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[1e] (c) an intermetallic layer having a third mean iron composition different from the first and second mean iron compositions, the third mean iron composition being higher than the second mean iron composition; and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (c) an intermetallic layer having a third mean iron composition different from the first and second mean iron compositions, the third mean iron composition being higher than the second mean iron composition. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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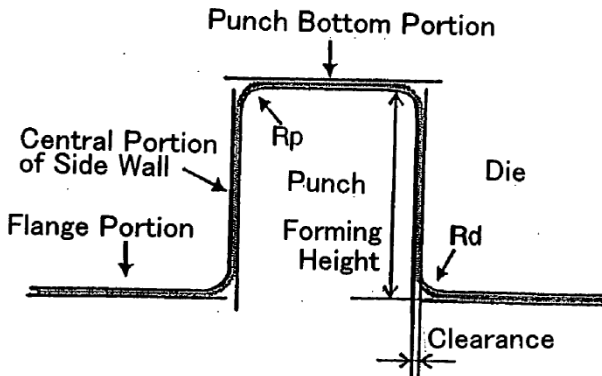
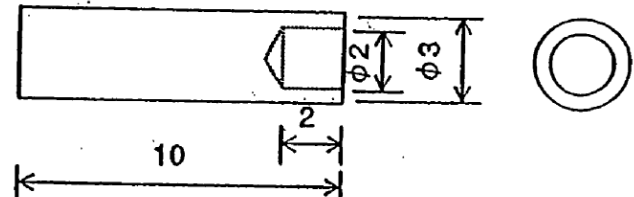
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[1f] (d) a superficial layer having a fourth mean iron composition different from the third mean iron composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant's infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (d) a superficial layer having a fourth mean iron composition different from the third mean iron composition. For example:
	 Fig. 1  Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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[1g] wherein the coating has a thickness greater than 30 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose wherein the coating has a thickness greater than 30 micrometers. For example: Fig. 1 “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]

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	TABLE 2										
						Measured	Average	Hardness	Maximum		
			Ac ₃	Ms	Critical	cooling	cooling				
	Run	Steel	point	point	cooling	rate to	from Ms	after	quench-	Dimensions	
	No.	No.	(° C.)	(° C.)	rate	Ms point	to 200° C.	hot press	ing	of dies	
					(° C./s)	(° C./s)	(° C./s)	forming	hardness	(t × W × L mm)	Remarks
								(Hv)	(Hv)		
	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This
	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-
	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion
4	4	785	370	10	60	30	683	750	50 × 400 × 400		
5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	
6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative	
Nishibata at Table 2.											
Claim 2											
[2] The precoated steel product as recited in claim 1 wherein the layers (c) and (d) are quasi continuous by occupying at least 90% of a level corresponding to each of the layers (c) and (d) and wherein less than 10% of layer (c) is present at an	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.										
	Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the layers (c) and (d) are quasi continuous by occupying at least 90% of a level corresponding to each of the layers (c) and (d) and wherein less than 10% of layer (c) is present at an extreme surface of the product. For example:										

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extreme surface of the product.	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the

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	shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021]

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	“Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the A_{c3} point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024]

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	“Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of

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	the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058]. TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks																																																																				
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4	4	785	370	10	60	30	683	750	50 × 400 × 400																																																																					
5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-																																																																				
6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative																																																																				
Claim 3																																																																														

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[3] The precoated steel product as recited in claim 1 wherein the base steel includes the following components by weight based on total weight: 0.15%<carbon<0.5%; 0.5%<manganese<3%; 0.1%<silicon<0.5%; 0.01%<chromium<1%; titanium<0.2%; aluminum<0.1%; phosphorus<0.1%; sulfur<0.05%; 0.0005%<boron<0.08%; and further comprises iron and impurities inherent in processing.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the base steel includes the following components by weight based on total weight: 0.15%<carbon<0.5%; 0.5%<manganese<3%; 0.1%<silicon<0.5%; 0.01%<chromium<1%; titanium<0.2%; aluminum<0.1%; phosphorus<0.1%; sulfur<0.05%; 0.0005%<boron<0.08%; and further comprises iron and impurities inherent in processing. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1.	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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	“In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “JP 08-269615 A1 discloses a hot rolled steel sheet for rapid quenching which comprises C: 0.18-0.30%, Si: 0.01-1.0%, Mn: 0.2-1.5%, P: at most 0.03%, S: at most 0.02%, sol. Al: at most 0.08%, Cr: 0.1-0.5%, B: 0.0006-0.0040%, N: at most 0.01%, optionally at least one of Cu: at most 0.5%, Ni: at most 0.3%, and Ti: 0.01-0.05%, and a remainder of iron. This steel sheet is given a high strength by high frequency hardening after it is cold worked.” Nishibata at [0008]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers

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	scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023]

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	“Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030]

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	“One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
Claim 4	
[4] The precoated steel product as recited in claim 1 wherein the base steel comprises the following	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.

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components by weight based on total weight: 0.20%<carbon<0.5%; 0.8%<manganese<1.5%; 0.1%<silicon<0.35%; 0.01%<chromium<1%; titanium<0.1%; aluminum<0.1%; phosphorus<0.05%; sulfur<0.03%; 0.0005%<boron<0.01%; and further comprises iron and impurities inherent in processing.	Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the base steel comprises the following components by weight based on total weight: 0.20%<carbon<0.5%; 0.8%<manganese<1.5%; 0.1%<silicon<0.35%; 0.01%<chromium<1%; titanium<0.1%; aluminum<0.1%; phosphorus<0.05%; sulfur<0.03%; 0.0005%<boron<0.01%; and further comprises iron and impurities inherent in processing. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
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	then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “JP 08-269615 A1 discloses a hot rolled steel sheet for rapid quenching which comprises C: 0.18-0.30%, Si: 0.01-1.0%, Mn: 0.2-1.5%, P: at most 0.03%, S: at most 0.02%, sol. Al: at most 0.08%, Cr: 0.1-0.5%, B: 0.0006-0.0040%, N: at most 0.01%, optionally at least one of Cu: at most 0.5%, Ni: at most 0.3%, and Ti: 0.01-0.05%, and a remainder of iron. This steel sheet is given a high strength by high frequency hardening after it is cold worked.” Nishibata at [0008]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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	“The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be

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	attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031]

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	“These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].																																																																																
Claim 5																																																																																	
[5] The precoated steel product as recited in claim 1 wherein the base steel comprises 20 ppm or less of sulfur.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the base steel comprises 20 ppm or less of sulfur. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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	prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “JP 08-269615 A1 discloses a hot rolled steel sheet for rapid quenching which comprises C: 0.18-0.30%, Si: 0.01-1.0%, Mn: 0.2-1.5%, P: at most 0.03%, S: at most 0.02%, sol. Al: at most 0.08%, Cr: 0.1-0.5%, B: 0.0006-0.0040%, N: at most 0.01%, optionally at least one of Cu: at most 0.5%, Ni: at most 0.3%, and Ti: 0.01-0.05%, and a remainder of iron. This steel sheet is given a high strength by high frequency hardening after it is cold worked.” Nishibata at [0008]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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[6] The precoated steel product as recited in claim 2 wherein the base steel comprises 20 ppm or less of sulfur.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 2 wherein the base steel comprises 20 ppm or less of sulfur. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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	“The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be

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	attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031]

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	“These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].																																																																																
Claim 7																																																																																	
[7] The precoated steel product as recited in claim 1 wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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	prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “JP 08-269615 A1 discloses a hot rolled steel sheet for rapid quenching which comprises C: 0.18-0.30%, Si: 0.01-1.0%, Mn: 0.2-1.5%, P: at most 0.03%, S: at most 0.02%, sol. Al: at most 0.08%, Cr: 0.1-0.5%, B: 0.0006-0.0040%, N: at most 0.01%, optionally at least one of Cu: at most 0.5%, Ni: at most 0.3%, and Ti: 0.01-0.05%, and a remainder of iron. This steel sheet is given a high strength by high frequency hardening after it is cold worked.” Nishibata at [0008]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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	attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031]

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[8] The precoated steel product as recited in claim 2 wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 2 wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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	“These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].
Claim 9	
[9] The precoated steel product as recited in claim 1 wherein the layer (a) has a thickness less than 15 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the layer (a) has a thickness less than 15 micrometers. For example:

EXHIBIT B-12

Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

'602 Patent	U.S. Patent Publication No. US 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References
	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is

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	reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content

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	is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053].

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	“FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058]. TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
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[10] The precoated steel product as recited in claim 1 wherein the layer (a) has a thickness less than 10 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.																																																																													

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Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

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	Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the layer (a) has a thickness less than 10 micrometers. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a

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	temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020]

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	cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058]. TABLE 2 <table border="1"> <thead> <tr> <th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr> </thead> <tbody> <tr> <td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr> <tr> <td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr> <tr> <td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr> <tr> <td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr> <tr> <td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr> <tr> <td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr> </tbody> </table>										Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
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Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

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[12] The precoated steel product as recited in claim 1 wherein the intermediate layer comprises the following components by weight based on total weight: 39 to 47% Fe, 53 to 61% Al, and 0 to 2% Si.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the intermediate layer comprises the following components by weight based on total weight: 39 to 47% Fe, 53 to 61% Al, and 0 to 2% Si. For example: TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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	“JP 08-269615 A1 discloses a hot rolled steel sheet for rapid quenching which comprises C: 0.18-0.30%, Si: 0.01-1.0%, Mn: 0.2-1.5%, P: at most 0.03%, S: at most 0.02%, sol. Al: at most 0.08%, Cr: 0.1-0.5%, B: 0.0006-0.0040%, N: at most 0.01%, optionally at least one of Cu: at most 0.5%, Ni: at most 0.3%, and Ti: 0.01-0.05%, and a remainder of iron. This steel sheet is given a high strength by high frequency hardening after it is cold worked.” Nishibata at [0008]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018]

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	“C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of

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	hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10°

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	C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
Claim 18	
[18] The precoated steel product as recited in claim 1 wherein the interdiffusion layer has a thickness of from 1 micron to 15 microns.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the interdiffusion layer has a thickness of from 1 micron to 15 microns. For example:

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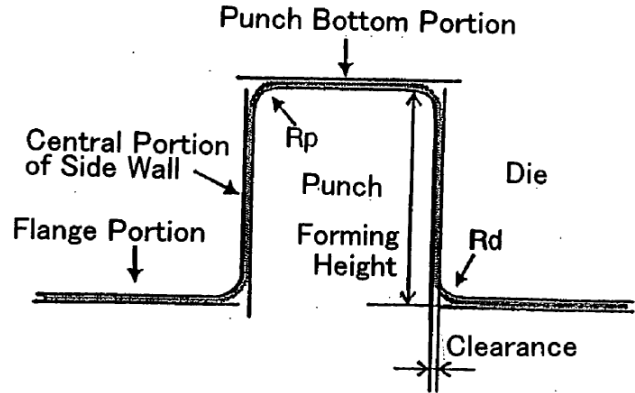
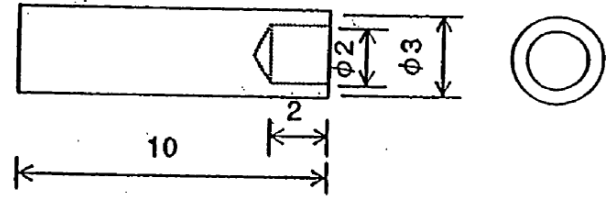
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	 Fig. 1  Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a

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	manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the

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	Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053].

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	“FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058]. TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks																																																																				
1	1	860	450	25	60	40	418	461	50 × 400 × 400	This																																																																				
2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-																																																																				
3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion																																																																				
4	4	785	370	10	60	30	683	750	50 × 400 × 400																																																																					
5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-																																																																				
6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative																																																																				
Claim 20																																																																														
[20] The precoated steel product as recited in claim 1 wherein the fourth mean iron composition is lower	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.																																																																													

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than the third mean iron composition.	Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 1 wherein the fourth mean iron composition is lower than the third mean iron composition. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V:

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	at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020]

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	“Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than

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	0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].

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	TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> Nishibata at Table 1. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		
	Claim 21																																																																																

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[21pre] A precoated steel product comprising:	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. To the extent the preamble of claim 1 is found to be limiting, Nishibata and/or one or more prior art references disclose a precoated steel product comprising. For example: “A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009]. “More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were

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	prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047] “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[21a] a strip of base steel having a first side and a second side; and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a strip of base steel having a first side and a second side. For example:

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	Fig. 1 Fig. 2 “A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009].

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	“More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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	“In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015].
[21b] a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards:	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards. For example:

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	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is

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	reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content

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	is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053].

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	“FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[21c] (a) an interdiffusion layer having a first mean iron composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (a) an interdiffusion layer having a first mean iron composition. For example: Fig. 1 Fig. 2

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	According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent.

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	1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024]

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'602 Patent	U.S. Patent Publication No. US 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References
	“Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].

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	“In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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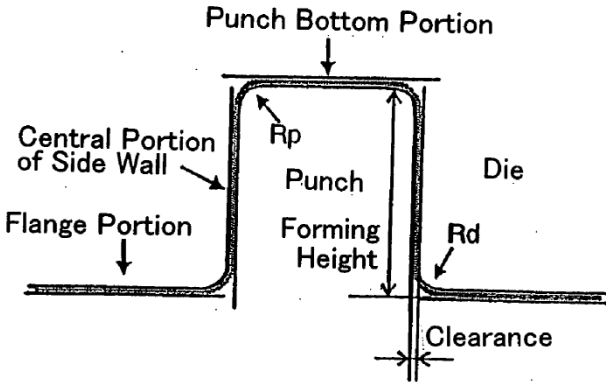
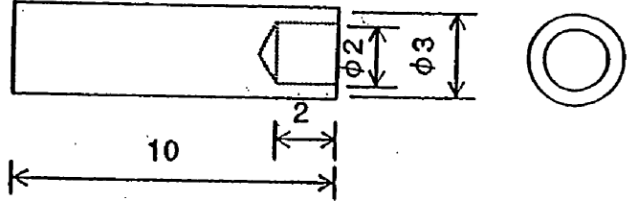
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	forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[21d] (b) an intermediate layer having a second mean iron composition different from the first mean iron composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (b) an intermediate layer having a second mean iron composition different from the first mean iron composition. For example:  Fig. 1  Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the

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	average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
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[21e] (c) an intermetallic layer having a third mean iron composition different from the first and second mean iron compositions, the third mean iron concentration being higher than the second mean iron composition, and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (c) an intermetallic layer having a third mean iron composition different from the first and second mean iron compositions, the third mean iron concentration being higher than the second mean iron composition. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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[21f] (d) a superficial layer having a fourth mean iron composition different from the first, second and third mean iron compositions,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (d) a superficial layer having a fourth mean iron composition different from the first, second and third mean iron compositions. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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[21g] wherein the coating has a thickness greater than 30 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose] wherein the coating has a thickness greater than 30 micrometers. For example: <i>Fig. 1</i> “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and

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	then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047] TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks																																																																				
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6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative																																																																				
Claim 22																																																																														
[22] The precoated steel product as recited in claim 21 wherein the fourth mean iron composition is lower than the third mean iron composition.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.																																																																													

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	Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 21 wherein the fourth mean iron composition is lower than the third mean iron composition. For example: According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013].

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	“The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be

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	attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031]

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	“These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table>	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
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Claim 24																																																																																	
[24pre] A precoated steel product comprising:	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with.																																																																																

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	To the extent the preamble of claim 1 is found to be limiting, Nishibata and/or one or more prior art references disclose a precoated steel product. For example: “A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009]. “More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011].

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	“In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and

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	then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047] “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[24a] a strip of base steel having a first side and a second side; and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a strip of base steel having a first side and a second side. For example: Fig. 1 Fig. 2

EXHIBIT B-12**Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References**

'602 Patent	U.S. Patent Publication No. US 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References
	“A hot press-formed member having stable strength and toughness is manufactured from a high strength steel sheet by hot press forming. In the cooling stage during hot press forming, the cooling rate is at least the critical cooling rate until the Ms point is reached and it is then in the range of 25-150° C/s in the temperature range from the Ms point to 200° C. The Vickers hardness of the hot pressed member is less than the value of (maximum quenching hardness –10) and at least the value of (maximum quenching hardness –100).” Nishibata at [Abstract]. “This invention relates to a hot formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part, and to a hot forming method used for its manufacture. More specifically, the present invention relates to a hot press-formed member and a hot press forming method for its manufacture.” Nishibata at [0001]. “The present invention provides a hot formed member which can be manufactured from a high strength steel sheet by hot forming and which has a stabilized strength and toughness, and it also provides a hot forming method for its manufacture.” Nishibata at [0009]. “More particularly, the present invention provides a hot press-formed member such as a mechanical structural part including a structural part of an automobile body and an automobile suspension part and a hot press forming method used for its manufacture.” Nishibata at [0010]. “According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V:

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	at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac_3 point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the M_s point (until the M_s point is reached) is at least the critical cooling rate, and such that the average cooling rate from the M_s point to 200°C. is in the range of $25\text{--}150^\circ\text{C./s}$. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “In a preferred embodiment of the present invention, the hot forming is hot press forming which is carried out using a pair of press forming dies.” Nishibata at [0014]. “According to the present invention, it is possible to manufacture a hot press-formed member having both a stabilized strength and toughness. Accordingly, the present invention greatly contributes to a broadening of the uses for press formed members of high strength steel sheets.” Nishibata at [0015].
[24b] a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose a coating on at least one of the first side of the strip of base steel and the second side of the strip of base steel, wherein the coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards. For example:

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or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards:	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the

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	forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021]

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	“Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the A_{c3} point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024]

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	“Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of

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	the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].
[24c] (a) an interdiffusion layer having a first mean aluminum composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (a) an interdiffusion layer having a first mean aluminum composition. For example:

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	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is

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	reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content

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	is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].

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	TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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[24d] (b) an intermediate layer having a second mean aluminum composition different from the first mean aluminum composition,	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (b) an intermediate layer having a second mean aluminum composition different from the first mean aluminum composition. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011].

EXHIBIT B-12**Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References**

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	“In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved

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	adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024]

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	“Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].

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	TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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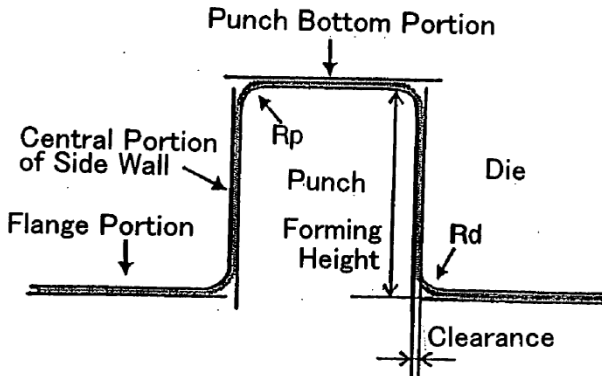
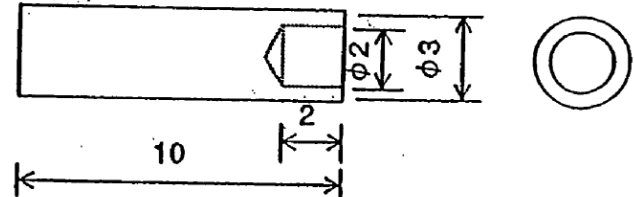
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[24e] (c) an intermetallic layer having a third mean aluminum composition different from the first and second mean aluminum compositions, and	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant's infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (c) an intermetallic layer having a third mean aluminum composition different from the first and second mean aluminum compositions. For example:  Fig. 1  Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature

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	at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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[24f] (d) a superficial layer having a fourth mean aluminum composition different from the first, second and third mean aluminum compositions, the second mean aluminum composition being greater than the third mean aluminum composition;	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose (d) a superficial layer having a fourth mean aluminum composition different from the first, second and third mean aluminum compositions, the second mean aluminum composition being greater than the third mean aluminum composition. For example: Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the

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	average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019]

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	“Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti

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	content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip

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	galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047]. TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008																																																																		
2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005																																																																		
3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001																																																																		
4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001																																																																		

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[24g] wherein the coating has a thickness greater than 30 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose wherein the coating has a thickness greater than 30 micrometers. For example: Fig. 1 “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and

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	then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047] TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks																																																																				
1	1	860	450	25	60	40	418	461	50 × 400 × 400	This																																																																				
2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-																																																																				
3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion																																																																				
4	4	785	370	10	60	30	683	750	50 × 400 × 400																																																																					
5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-																																																																				
6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative																																																																				
Claim 25																																																																														
[25] The precoated steel product as recited in claim 24 wherein the fourth mean aluminum composition is less than the second mean aluminum composition.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 24 wherein the fourth mean aluminum composition is less than the second mean aluminum composition. For example:																																																																													

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	Fig. 1 Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%, Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a

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	manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the

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	Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024]

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	“Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].

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Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

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	TABLE 1 Steel Chemical composition (mass %, balance: essentially Fe) <table><tr><th>No.</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cu</th><th>Ni</th><th>Cr</th><th>Mo</th><th>V</th><th>Ti</th><th>Nb</th><th>Al</th><th>B</th><th>N</th></tr><tr><td>1</td><td>0.16</td><td>0.02</td><td>1.36</td><td>0.019</td><td>0.004</td><td>0.01</td><td>0.01</td><td>0.19</td><td>—</td><td>0.01</td><td>0.03</td><td>—</td><td>0.06</td><td>0.0013</td><td>0.008</td></tr><tr><td>2</td><td>0.21</td><td>0.25</td><td>1.20</td><td>0.008</td><td>0.002</td><td>0.01</td><td>0.02</td><td>0.20</td><td>—</td><td>0.01</td><td>0.02</td><td>0.01</td><td>0.05</td><td>0.0007</td><td>0.005</td></tr><tr><td>3</td><td>0.33</td><td>0.11</td><td>1.53</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>—</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0015</td><td>0.001</td></tr><tr><td>4</td><td>0.42</td><td>0.11</td><td>1.51</td><td>0.001</td><td>0.001</td><td>—</td><td>—</td><td>0.20</td><td>0.01</td><td>—</td><td>0.02</td><td>—</td><td>0.04</td><td>0.0014</td><td>0.001</td></tr></table> “A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].	No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N	1	0.16	0.02	1.36	0.019	0.004	0.01	0.01	0.19	—	0.01	0.03	—	0.06	0.0013	0.008	2	0.21	0.25	1.20	0.008	0.002	0.01	0.02	0.20	—	0.01	0.02	0.01	0.05	0.0007	0.005	3	0.33	0.11	1.53	0.001	0.001	—	—	0.20	—	—	0.02	—	0.04	0.0015	0.001	4	0.42	0.11	1.51	0.001	0.001	—	—	0.20	0.01	—	0.02	—	0.04	0.0014	0.001
No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	N																																																																		
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Claim 26																																																																																	

EXHIBIT B-12

Invalidity of U.S. Patent Nos. 10,961,602 in View of U.S. Patent Publication No. 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References

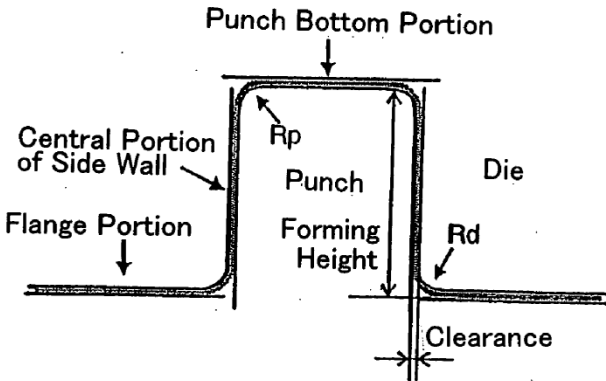
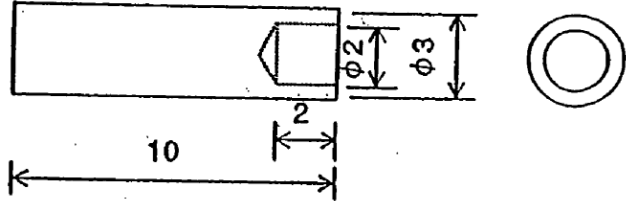
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[26] The precoated steel product as recited in claim 24 wherein the layer (a) has a thickness less than 15 micrometers.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 24 wherein the layer (a) has a thickness less than 15 micrometers. For example:  Fig. 1  Fig. 2 According to the present invention, a hot formed member with a stabilized strength and toughness can be manufactured by hot forming in which during cooling after forming, such as during die cooling, the average cooling rate in a temperature region extending downwards from the Ms point (the temperature at which martensite begins to form from austenite) is restricted within certain limits.” Nishibata at [0011]. “In one embodiment, the present invention relates to a hot forming method in which a steel sheet having a steel composition consisting essentially, in mass percent, of C: 0.15-0.45%, Mn: 0.5-3.0%,

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	Cr: 0.1-0.5%, Ti: 0.01-0.1%, B: 0.0002-0.004%, Si: at most 0.5%, P: at most 0.05%, S: at most 0.05%, Al: at most 1%, N: at most 0.01%, one or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%, and a remainder of Fe and unavoidable impurities is heated to a temperature of at least the Ac_3 point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the M_s point (until the M_s point is reached) is at least the critical cooling rate, and such that the average cooling rate from the M_s point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac_3 point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of

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	hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020] “Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024]

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	“Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than 0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032]. “In this example, steel sheets having the compositions shown in Table 1 (sheet thickness: 1.0 mm) were used as steel sheets to be worked. These steel sheets were manufactured from slabs, which were prepared by melting in a laboratory, by hot rolling and subsequent cold rolling. For Steel No. 2, hot dip galvanizing (with a zinc coating weight of 60 g/m² per side) was applied using a plating simulator, and then alloying heat-treatment (galvannealing) (to an Fe content in the plating film of 15 mass %) was carried out.” Nishibata at [0047].

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	“A cylindrical test piece (FIG. 2) having a diameter of 3.0 mm and a length of 10 mm was cut from a hot rolled steel sheet. The test piece was heated in air to 950° C. at a rate of temperature increase of 10° C/s and held for 5 minutes at that temperature, and then it was cooled to room temperature at various cooling rates. By measuring the change in thermal expansion of the test piece during the heating and cooling stages, the Ac₃ point and the Ms point were determined. In addition, measurement of the Vickers hardness (with a load of 49 N, 5 measurements) of the resulting test piece and observation of the structure were carried out, and from these results, the critical cooling rate was estimated.” Nishibata at [0053]. “FIG. 1 is a schematic diagram illustrating the hat-shaped press forming method used herein using a pair of dies in the form of a die and a punch. The hot press forming conditions which were used were a forming height of 70 mm, Rd (R of the die shoulder portion) of 8 mm, Rp (R of the punch shoulder portion) of 8 mm, a clearance of 1.0 mm, and a blank holder pressure of 12.7 kN.” Nishibata at [0058].

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	TABLE 2 <table><tr><th>Run No.</th><th>Steel No.</th><th>Ac₃ point (° C.)</th><th>Ms point (° C.)</th><th>Critical cooling rate (° C./s)</th><th>Measured cooling rate to Ms point (° C./s)</th><th>Average cooling rate from Ms point to 200° C. (° C./s)</th><th>Hardness after hot press forming (Hv)</th><th>Maximum quenching hardness (Hv)</th><th>Dimensions of dies (t × W × L mm)</th><th>Remarks</th></tr><tr><td>1</td><td>1</td><td>860</td><td>450</td><td>25</td><td>60</td><td>40</td><td>418</td><td>461</td><td>50 × 400 × 400</td><td>This</td></tr><tr><td>2</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>100</td><td>451</td><td>501</td><td>50 × 400 × 400*¹</td><td>inven-</td></tr><tr><td>3</td><td>3</td><td>823</td><td>390</td><td>10</td><td>60</td><td>40</td><td>560</td><td>652</td><td>50 × 400 × 400</td><td>tion</td></tr><tr><td>4</td><td>4</td><td>785</td><td>370</td><td>10</td><td>60</td><td>30</td><td>683</td><td>750</td><td>50 × 400 × 400</td><td></td></tr><tr><td>5</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>22*³</td><td>390</td><td>501</td><td>50 × 50 × 400</td><td>Comapr-</td></tr><tr><td>6</td><td>2</td><td>823</td><td>410</td><td>17</td><td>60</td><td>200*³</td><td>500</td><td>501</td><td>50 × 50 × 400*²</td><td>ative</td></tr></table> Nishibata at Table 2.	Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks	1	1	860	450	25	60	40	418	461	50 × 400 × 400	This	2	2	823	410	17	60	100	451	501	50 × 400 × 400* ¹	inven-	3	3	823	390	10	60	40	560	652	50 × 400 × 400	tion	4	4	785	370	10	60	30	683	750	50 × 400 × 400		5	2	823	410	17	60	22* ³	390	501	50 × 50 × 400	Comapr-	6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative
Run No.	Steel No.	Ac ₃ point (° C.)	Ms point (° C.)	Critical cooling rate (° C./s)	Measured cooling rate to Ms point (° C./s)	Average cooling rate from Ms point to 200° C. (° C./s)	Hardness after hot press forming (Hv)	Maximum quenching hardness (Hv)	Dimensions of dies (t × W × L mm)	Remarks																																																																				
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6	2	823	410	17	60	200* ³	500	501	50 × 50 × 400* ²	ative																																																																				
Claim 28																																																																														
[28] The precoated steel product as recited in claim 24 wherein the intermediate layer comprises the following components by weight based on total weight: 39 to 47% Fe, 53 to 61% Al, and 0 to 2% Si.	The ALJ has not yet construed the claims and therefore the meaning of the terms in the claims has yet to be resolved by the ALJ. The support identified here for this limitation is responsive to Complainant’s infringement contentions, which Respondents disagree with. Nishibata and/or one or more prior art references disclose the precoated steel product as recited in claim 24 wherein the intermediate layer comprises the following components by weight based on total weight: 39 to 47% Fe, 53 to 61% Al, and 0 to 2% Si. For example:																																																																													

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	temperature of at least the Ac₃ point of the steel and held at that temperature before it is formed into the shape of a finished member. According to the present invention, at the time of cooling from the forming temperature during forming or after forming, quenching is carried out by cooling in such a manner that the cooling rate of the resulting formed member to the Ms point (until the Ms point is reached) is at least the critical cooling rate, and such that the average cooling rate from the Ms point to 200° C. is in the range of 25-150° C./s. In the present invention, the critical cooling rate means the upper critical cooling rate.” Nishibata at [0012]. “In another embodiment, the present invention relates to a hot formed member made from a steel sheet having the above-described steel composition. The hot formed member has a hardness on the Vickers scale after hot forming, the hardness being less than the value of (maximum quenching hardness –10) and not less than the value of (maximum quenching hardness –100).” Nishibata at [0013]. “The above-described steel composition and forming conditions are employed in the present invention for the following reasons. In the present invention, percent with respect to the steel composition, i.e., the chemical composition of the steel means mass percent. 1. Composition of the Steel Sheet to be Worked”. Nishibata at [0018] “C: 0.15-0.45%”. Nishibata at [0019] “Carbon (C) is an extremely important element because it increases the hardenability of a steel sheet and it primarily determines the strength thereof after hardening. In addition, it is an element which lowers the Ac₃ point of a steel and promotes a decrease of the heating temperature required for hardening (quenching). If the C content is less than 0.15%, these effects cannot be achieved adequately, while if the C content exceeds 0.45%, there is a marked decrease in the toughness of hardened portions. Preferably, the lower limit of the C content is 0.16% and the upper limit thereof is 0.35%.” Nishibata at [0020]

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'602 Patent	U.S. Patent Publication No. US 2006/0185774 (“Nishibata”) alone and/or in view of One or More Prior Art References
	“Mn: 0.5-3.0%”. Nishibata at [0021] “Manganese (Mn) is an element which is extremely effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it is an element which lowers the Ac₃ point and promotes a decrease in the heating temperature required for hardening. If the Mn content is less than 0.5%, these effects cannot be attained adequately, while an Mn content exceeding 3.0% results in the effects thereof saturating and leads to a decrease in the toughness of hardened portions. A preferred Mn content is 0.8-2.0%.” Nishibata at [0022] “Cr: 0.1-0.5%”. Nishibata at [0023] “Chromium (Cr) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. If the Cr content is less than 0.1%, these effects cannot be attained adequately, while if the Cr content exceeds 0.5%, its effects saturate, leading to a needless increase in costs. A preferred Cr content is 0.15-0.30%.” Nishibata at [0024] “Ti: 0.01-0.1%”. Nishibata at [0024] “Titanium (Ti) is an element which is effective for increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening. In addition, it has the effect of increasing the toughness of hardened portions. If the Ti content is less than 0.01%, these effects are not adequate, while if the Ti content exceeds 0.1%, its effects saturate, leading to a needless increase in cost. A preferred Ti content is 0.015-0.03%.” Nishibata at [0024] “B: 0.0002-0.004%”. Nishibata at [0024] “Boron (B) is an important element for increasing the hardenability of steel sheets and for further increasing the effect of stably guaranteeing strength after hardening. If the B content is less than

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	0.0002%, its effects are inadequate, while if the B content exceeds 0.004%, its effects saturate and an increase in costs results. A preferred B content is 0.0005-0.0025%.” Nishibata at [0024] “Si: at most 0.5%, P: at most 0.05%, S: 0.05%, Al: at most 1%, N: at most 0.01%”. Nishibata at [0024] “Each of these elements also has the effects of increasing the hardenability of a steel sheet and increasing the stability of the strength after hardening. However, if the respective contents exceed the above-described respective upper limits, the effects thereof saturate and lead to an increase in costs.” Nishibata at [0030] “One or more of Ni: at most 2%, Cu: at most 1%, Mo: at most 1%, V: at most 1%, and Nb: at most 1%”. Nishibata at [0031] “These elements also have the effect of increasing the hardenability of a steel sheet and stably guaranteeing strength after hardening, so one or more of these are included. However, the effects of including them in an amount exceeding the respective upper limits are not significant, and doing so leads to a needless increase in costs, so the contents of these alloying elements are in the above-described ranges.” Nishibata at [0032].