"[W]hether the complainant's investment and/or employment activities are 'significant' is not measured in the abstract or in an absolute sense, but rather is assessed with respect to the nature of the activities and how they are 'significant' to the articles protected by the intellectual property right." *Certain Printing and Imaging Devices and Components Thereof* ("*Printing and Imaging Devices*"), Inv. No. 337-TA-690, Comm'n Op., EDIS Doc. ID 444708 at 26 (Feb. 17, 2011). The undersigned finds that a preponderance of the evidence shows that the domestic investments in plant and equipment as well as labor and capital with respect to at least the Simwon DI Direct Products are significant.

First, the evidence shows that ArcelorMittal's and Simwon's domestic investments are qualitatively significant to the Simwon DI Direct Products. As discussed above, ArcelorMittal's allocated domestic investments relate to plant and equipment, and labor and capital, used to manufacture the DI Precursor Products used for the Simwon DI Direct Products. Similarly for Simwon, the evidence shows it has hot-stamping lines in the United States that are dedicated to making its DI Direct Products, *i.e.* the four [redacted] This evidence strongly supports a finding of qualitative significance. *See Certain Male Prophylactic Devices*, 337-TA-546, Comm'n Op., EDIS Doc. ID 279161 at 45 (Aug. 1, 2007) (stating that "domestic production" is "precisely the activity that section 337 is designed to cover"); *Certain Bone Cements and Components Thereof and Products Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op., EDIS Doc. ID 731649 at 24 (Jan. 25, 2021) ("Other types of activities, such as manufacturing in the United States, have traditionally been considered ones that Congress intended to form the basis for a domestic industry and the Commission generally credits them towards a domestic industry"); *Certain Toner Supply Containers and Components Thereof (I)*, Inv. No. 337-TA-1259, Init. Det., EDIS Doc. ID 766498 at 81 (Mar. 24, 2022) ("Canon's

activities are core manufacturing activities that produce patented articles, converting parts and materials into saleable, useful products. Such activities have long been recognized as a domestic industry within the meaning of section 337.") (internal citations omitted), *aff'd in relevant part by* Comm'n Op., EDIS Doc. ID 778370 at 13 (Aug. 19, 2022); *Certain Wearable Monitoring Devices, Sys. & Components Thereof*, Inv. No. 337-TA-1190, Order No. 34, EDIS Doc. ID 723447 at 30-31 (finding significance where domestic industry product was developed and made in the U.S. and stating "[t]his is not a case where a product is largely manufactured in another country and a determination must be made whether domestic activities are significant in the context of that overseas production"), *aff'd in relevant part*, Comm'n Op., EDIS Doc. ID 741594, at 38-39 (May 5, 2021); *Certain Power Converter Modules & Computing Sys. Containing the Same*, Inv. No. 337-TA-1370, Comm'n Op., EDIS Doc. ID 844518 at 95-96 (Feb. 27, 2025) ("the fact that all of [Complainant's] manufacturing and ER&D takes place in the United States, provides an additional reason to affirm the FID's finding that [Complainant's] investments in plant and equipment and labor and capital are significant").[79]

[79] Respondents argue that "ArcelorMittal has failed to provide context for how the alleged investments compare to ArcelorMittal's global operations, much less how they compare to the overall global (or even U.S.) operations of the various third-party steel manufacturers and/or hot stampers." *See* RIB at 172. Yet, Respondents have not set forth evidence regarding ArcelorMittal's "global operations" or the "overall global operations . . . of the various . . . hot stampers." Under the circumstances, including the evidence that Simwon's DI Direct Products (and their Precursor Products) are manufactured in the U.S., the undersigned finds that a lack of comparison to "global operations" does not affect the existence of a domestic industry. *See* CRB at 87. Similarly, Respondents' argument that the demonstrated quantitative investments are "rounding errors" (RIB at 171) in the context of ArcelorMittal's business is unpersuasive given the factors relating to significance discussed above and the importance of the domestic investments to at least the Simwon DI Direct Products. *See, e.g., Certain Lithium Metal Oxide Cathode Materials, Lithium-ion Batteries for Power Tool Products Containing the Same, and Power Tool Products with Lithium-ion Batteries Containing Same*, Inv. No. 337-TA-951, Initial Det., 2019 WL 4010940, at *59 (Feb. 29, 2016) ("From the perspective of an extremely large business like BASF, the percentage of capital, labor, and other domestic investments may be relatively small when compared to its global sales. However, such expenditures may still have a significant effect on the relevant domestic industry in the United States."), *vacated in part on other grounds*, Comm'n Op., 2019 WL 4010940, at *23 (Dec. 22, 2016).

Particularly in this context, the evidence also shows that ArcelorMittal's and Simwon's investments in the Simwon DI Direct Products alone (totaling over [redacted] in 2023 for plant and equipment and over [redacted] in labor and capital) are quantitatively significant. As an initial matter, a comparison of manufacturing investments in the United States to foreign investments shows quantitative significance as 100% of the manufacturing of the Simwon DI Direct Products from raw steel occurs in the United States. *See* Tr. (Malackowski) at 368:7-369:19 ("Everything I have looked at is manufactured by a US Tier 1 manufacturer in the United States."); Tr. (Richards) at 309:16-20 (noting manufacture process at Calvert starting from "steel slabs"); Tr. (Malackowski) at 416:16-417:3 (noting manufacture process from "raw steel"); *Certain Luxury Vinyl Tile & Components Thereof*, Inv. No. 337-TA-1155, Init. Det., EDIS Doc. ID 716630 at 240 (Aug. 7, 2020) (finding significance where 100% of the manufacture of the domestic industry product occurred domestically), *not reviewed in relevant part by* Comm'n Notice, EDIS Doc. ID 713658 (June 30, 2020); *Certain Lithium-Ion Battery Cells, Battery Modules, Battery Packs, Components Thereof & Prods. Containing Same*, Inv. No. 337-TA-1181, Order No. 28, EDIS Doc. ID 728455 at 16 (Nov. 23, 2020) ("Significantly, LGC asserts that the P2.7 product is manufactured exclusively in the U.S., meaning that 100% of its investments in the P2.7 product are domestic. While the number of P2.7 units produced is smaller than that of the other domestic industry products, the qualitative and quantitative significance of the P2.7 product is considerable."), *not reviewed by* Comm'n Notice, EDIS Doc. ID 728884 (Dec. 23, 2020); *cf. Certain Gas Spring Nailer Prods. and Components Thereof*, Inv. No. 337-TA-1082, Comm'n Op., 2020 WL 2093834, at *41 (April 28, 2020) (finding quantitative significance where "all, *i.e.*, 100 percent, of Kyocera's R&D and engineering expenditures relating to complainant's Fusion Nailers occurs in the United States"), *vacated and*

remanded on other grounds, *Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n.*, 22 F.4th 1369 (Fed. Cir. 2022).

In addition, the evidence shows that ArcelorMittal's domestic industry investments in Calvert are significant in the context of a value-add analysis because the domestic activities at Calvert add value to the DI Precursor Products (including those DI Precursor Products used for the Simwon DI Direct Products). *See* CIB at 171-174; *Wuhan Healthgen Biotech. Corp. v. Int'l Trade Comm'n*, 127 F.4th 1334, 1339 (Fed. Cir. 2025) (recognizing the value added by domestic operations as a quantitative factor in the significance assessment); *Certain Beverage Dispensing Sys. and Components Thereof* ("*Beverage Dispensing Sys.*"), Inv. No. 337-TA-1130, Comm'n Op. EDIS Doc. ID 706256 at 20-21 (Mar. 26, 2020) ("[T]he Commission has 'sought to place the value of domestic investments in the context of the relevant marketplace, such as by . . . considering the value added to the product from a complainant's activities in the United States.'") (internal citations omitted). For example, the record evidence shows that based on the costs incurred by Calvert to transform raw steel into DI Precursor Products, there is about a [redacted] value added through this effort (even without considering any additional value added by Simwon through the hot-stamping process).[80] *See* Tr. (Malackowski) at 416:12-23; CDX-0002C.55; *Male Prophylactic Devices*, Comm'n Op. at 43 (crediting a domestic value add of 34% in finding significance); *Beverage Dispensing Sys.*, Comm'n Op. at 21 (crediting the value added by complainants' domestic licensee ranging from about 20-85% in finding the existence of a

[80] *See Certain Automated Put Walls & Automated Storage and Retrieval Sys., Assoc. Vehicles, Assoc. Control Software, & Component Parts Thereof* ("*Automated Put Walls*"), Inv. No. 337-TA-1293, Comm'n Op., EDIS Doc. ID 802614 at 26 n.22 (Aug. 17, 2023) (Commissioner Kearns noting that where the DI products are "[redacted] engineered, researched, developed, and manufactured in the United States . . . , the value added by the domestic operations will usually be significant"); *Certain Printing and Imaging Devices and Components Thereof* ("*Printing and Imaging Devices*"), Inv. No. 337-TA-690, Comm'n Op., EDIS Doc. ID 444708, at 32 n.10 (Feb. 17, 2011) (noting suitability of value-add analysis, including where "domestic activities involve at least some production work.").

domestic industry under (A) and (B)). In addition, the evidence indicates that the value added by the hot stamping process is on the order of [redacted]. *See* Tr. (Malackowski) at 416:24-417:14 and CDX-0002C.55; CIB at 174; RX-1277C ([redacted] (Magna) Dep. Tr.) at 82:14-18.

* * *

Accordingly, for the reasons discussed above, the undersigned finds that ArcelorMittal satisfies the economic prong of the domestic industry requirement at least under 19 U.S.C. § 1337(a)(3)(A) and (B) based at least on ArcelorMittal's domestic investments and Simwon's domestic investments with respect to the Simwon DI Direct Products.

VIII. INVALIDITY

A. Priority

The parties dispute the priority date that should be accorded to the Asserted Patents. The Asserted Patents claim priority to the same application, U.S. Appl. No. 12/447,777, filed on October 30, 2006. *See* '602 patent, cover; '227 patent, cover. ArcelorMittal contends that the Asserted Patents are entitled to a priority date "of no later than December 2005." CIB at 56. With respect to the Respondents' on-sale and patent/printed publication asserted prior art, however, none of the invalidity arguments depend on the resolution of the priority date that should be afforded the Asserted Patents. The Passat is alleged to be prior art under pre-AIA § 102(b) as "on sale in this country" "more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b); RIB at 70. Lachmann is alleged to be a printed publication available as of January 18, 2005. RIB at 51. Cornette is alleged to be a printed publication presented as a technical paper between March 3-8, 2001 and publicly available at least as of March 13, 2001. RIB at 40. Laurent is U.S. Patent No. 6,296,805, issued October 2, 2001, and incorporated by reference in the Asserted Patents. RIB at 52. Given that the resolution of

invalidity on these issues does not require determining whether the Asserted Patents should be accorded an earlier validity date, the undersigned need not reach the issue of priority.[81]

B. Anticipation by Passat

Respondents contend that a 2006 Volkswagen Passat B-Pillar ("Passat") anticipates each Asserted and DI Claim of the Asserted Patents. RIB at 68, 121. ArcelorMittal raises four challenges: (1) whether Respondents have shown by clear and convincing evidence that the Passat was in public use or on sale prior to the relevant priority date; (2) whether the tested B-Pillar was original to the Passat; (3) whether the methodology used to test the coupons of the Passat is reliable and constitutes clear and convincing evidence of invalidity; and (4) whether Respondents established the existence of the claimed four-layer structure. CIB at 67-86. The first three arguments cut across all claims of the Asserted Patents and are addressed, in turn, before considering the claim-by-claim analysis of invalidity.

For the reasons discussed below, the undersigned finds that Respondents have shown, by clear and convincing evidence, that the Passat anticipates each Asserted and DI Claim of the '602 patent. The undersigned also finds that Respondents have shown, by clear and convincing evidence, that the Passat anticipates claims 1, 2, 4, 5, 7, 9, 10, 13, 15-17, and 24 of the '227 patent, but Respondents have not met their burden to show that the Passat anticipates claims 8 and 11 of the '227 patent.

[81] The alleged anticipation by Magna—to the extent the revision date, rather than the original date of the control plan is credited—would require resolution of priority. But as discussed in more detail below, Respondents failed to establish anticipation based on the Magna control plan and the Magna DI Direct Products for reasons unrelated to the alleged date of the control plan. Accordingly, the undersigned need not reach the question of whether the Asserted Patents should be accorded an earlier priority date.

1. Prior Art Status of Passat

Respondents acquired—through a company called Roush Industries—a 2006 Volkswagen Passat with a VIN Number of WVWAK73C66P041049). *See* RPX-0001; RX-0085.2; RX-0714. Roush tore down the vehicle and extracted the B-pillar and sample coupons from the B-Pillar, which they sent to Dr. Bradley for testing and imaging. RX-0085.4-9. Respondents contend that the Passat is prior art under 35 U.S.C. § 102(b) because it was on sale in the United States as of August 16, 2005, was serviced by a dealership on August 19, 2005 and on September 12, 2005, and was leased to its first owner on October 4, 2005, all of which are more than one year before the filing of the application to which the '602 patent claims priority on October 30, 2006. RIB at 70; RRB at 18. In support, Respondents rely in part on a Carfax Vehicle History Report ("Carfax Report") identifying these dates and events. RX-0059. Respondents argue that the entries within the Carfax Report reinforce its reliability, as the entries indicate that the vehicle was serviced at the same dealership at which it was offered for sale with reported mileages consistent with a new car. RRB at 18. Respondents also argue that the title update on October 4, 2005 was reported by the Connecticut Motor Vehicle Department, a government agency in the same state in which the vehicle was serviced and offered for sale. RRB at 18.

ArcelorMittal argues that Respondents have failed to establish that the Passat was on sale by clear and convincing evidence. CIB at 67. ArcelorMittal argues that the Carfax Report is hearsay and is "unsubstantiated, unreliable, and foundationless," CIB at 68, and cannot constitute clear and convincing evidence that the Passat was on sale more than one year before the October 30, 2006 filing date of the priority application. *Id.* ArcelorMittal argues that before the Commission, hearsay evidence must be reliable and that Respondents did not adduce evidence of

reliability of the Carfax Report, which ArcelorMittal contends is unreliable on its face based on disclaimers that the report may contain errors or omissions. CIB at 68. ArcelorMittal also argues that "uncorroborated hearsay" cannot, as a matter of law, establish that a reference is prior art. CIB at 69 (citing *Finnigan Corp. v. Int'l Trade Commission*, 180 F.3d 1354, 1367, 1370 (Fed. Cir. 1999)); CRB at 33. ArcelorMittal argues that the corroboration of the Carfax Report is only as to the present condition of the Passat (e.g., make, model, VIN number, mileage, and current vehicle title), which does not corroborate information about the date of first sale. CIB at 70. ArcelorMittal also distinguishes the cases cited in Order No. 26—which denied ArcelorMittal's motion *in limine* to preclude the Carfax Report on the basis of a hearsay objection—on the basis that those cases were either decided in the context of summary determination, or were used in conjunction with the testimony of a percipient witness. CIB at 70-73. ArcelorMittal also argues that Dr. Brown cannot serve as a conduit for the hearsay, as he did not add any analysis to the report or establish that metallurgists reasonably rely on Carfax reports. CIB at 73-74; CRB at 33.

In response, Respondents contend that ArcelorMittal's arguments require assuming that four separate entries are each wrong, and that the totality of entries within the Carfax Report—culminating in entries regarding the present condition of the Passat that are conceded to be accurate—establish that the tested Passat is prior art. RRB at 17-19.

Upon consideration of the evidence of record and the arguments of the parties, the undersigned finds that Respondents have established, by clear and convincing evidence, that the Passat is prior art to the Asserted Patents. The Passat itself and photographs thereof,[82] as well as

[82] The Passat was admitted without objection as RPX-0001. In lieu of the vehicle itself, Respondents submitted a compilation of photographs of the vehicle before and after teardown marked as RPX-0001. *See* RPX-0001. The vehicle itself is in storage with Roush Industries, the company who completed the teardown. *See* RX-0085.0008.

test results, are in evidence, and the model year and make of the Passat is not in dispute. *See* CIB at 70 (noting that the "make, mileage, body style, VIN number, and most recent state of sale" are all corroborated by the vehicle itself and are not in dispute); *see also* RX-0714.1 (Passat Purchase and Title Reassignment) (identifying the year, make, model, VIN, trim, and mileage (as of 8/2/2024) of the Passat). Only the date that the Passat was on sale or in public use is in dispute.

First, ArcelorMittal is mistaken in its contention that hearsay—as a matter of law—cannot be used to establish prior public use or an on-sale bar. ArcelorMittal cites to case law requiring corroboration of ***oral*** witness testimony of prior invention with some sort of tangible documentation. CIB at 69; *Finnigan Corp. v. Int'l Trade Comm'n*, 180 F.3d 1354, 1366 (Fed. Cir. 1999) ("The law has long looked with disfavor upon invalidating patents on the basis of mere ***testimonial*** evidence absent other evidence that corroborates that testimony.") (emphasis added); *see also Woodland Trust v. Flowertree Nursery, Inc.*, 148 F.3d 1368, 1373 (Fed. Cir. 1998) (noting that the skepticism with which mere testimony of invalidating activity is received is "reinforced, in modern times, by the ubiquitous paper trail of virtually all commercial activity. It is rare indeed that some physical record (e.g., a written document such as notes, letters, invoices, notebooks, or a sketch or drawing or photograph showing the device, a model, or some other contemporaneous record) does not exist."). The policy behind the corroboration requirement for oral testimony is animated by the unreliability of witness testimony (and particularly the testimony of interested witnesses). *See Finnigan*, 180 F.3d at 1366 ("[T]estimony concerning invalidating activities can be 'unsatisfactory' due to 'the forgetfulness of witnesses, their liability to mistakes, their proneness to recollect things as the party calling them would have them recollect them, aside from the temptation to actual perjury.'" (quoting *Washburn & Moen*

Mfg. Co. v. Beat 'Em All Barbed-Wire Co., 143 U.S. 275, 284 (1892)). That concern is not present given the documents present here, and the Federal Circuit and other tribunals have credited a variety of forms of evidence—including hearsay in administrative proceedings—in considering whether a particular prior art reference has been shown to be publicly available, in public use, or on sale. *See, e.g.*, *In re Epstein*, 32 F.3d 1559, 1565 (Fed. Cir. 1994) (crediting hearsay as sole evidence of public use in *ex parte* administrative proceeding, noting "[w]e agree with appellant that the statements of 'release' and 'first installation' in the abstracts are, generally speaking, hearsay statements. The statements are out-of-court written assertions offered by the PTO to prove the truth of the matter asserted, namely, that the various software products were 'in public use or on sale' at a time some two years before the date that the abstracts were published. We do not accept, however, the *per se* rule that hearsay statements can never be relied upon to establish facts necessary to support a rejection."); *Telefonaktiebolaget LM Ericsson v. TCL Corp.*, 941 F.3d 1341, 1347 (Fed. Cir. 2019) (finding substantial evidence of public availability of printed publication based on librarian declaration, "the date on the face of the journal," and library records showing receipt of the journal); *Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1375 (Fed. Cir. 2021) (crediting, among other things, the date identified for a reference in an IDS filed by the applicant as evidence of public accessibility as of that date); *Pfund v. U.S.*, 40 Fed. Cl. 313, 338 (1998), *aff'd*, 178 F.3d 1313 (Fed. Cir. 1999) (crediting abstract contained in government research report indicating public availability of full prior art report as clear and convincing evidence of public availability); *Juniper Networks, Inc. v. Smart Path Connections, LLC*, No. IPR2021-01170, 2022 WL 94552, at *10 (P.T.A.B. Jan. 5, 2022) (crediting a document ("FastRoute History") memorializing changes to an IETF draft as evidence of date of public availability and publication).

Moreover, although the Carfax Report is hearsay, in section 337 proceedings, "[h]earsay may be admitted if it appears reliable, and it should be admitted if the nature of the information and the state of the particular record make it useful." *Reclosable Plastic Bags*, Inv. No. 337-TA-22, Comm'n Op., 1977 WL 52333, *8 (Jan. 17, 1977); *see also Certain Network Devices, Related Software and Components Thereof (I)*, Inv. No. 337-TA-944, Comm'n Op., EDIS Doc. ID 586600 at 15 (July 26, 2016). ("The Commission is not bound to apply the [Federal Rules of Evidence] . . . [it] is bound by the Administrative Procedures Act, 5 U.S.C. § 500-596, and can consider all relevant evidence."); *see also Epstein*, 32 F.3d 1559, 1566 (relying on hearsay as evidence of public use where "we have no reason to believe that the abstracts and the statements of 'release' and 'first installed' appearing in the abstracts are inaccurate or that the authors of the statements are untrustworthy. There is nothing on the face of the documents that suggests the information has been altered in any way. . . . To flatly reject the abstracts as unreliable would require us to assume that the vendors are engaging in false or misleading advertising, which—in the absence of evidence supporting such—we will not assume"). There is no dispute that—if accurate—the entries on the Carfax Report would constitute evidence of a commercial offer for sale. *See generally* CIB, CRB. The question, then, is whether the Carfax Report is sufficiently reliable to constitute clear and convincing evidence that the Passat was on sale more than a year prior to October 30, 2006. The undersigned finds that the Carfax Report—in conjunction with significant other evidence in the record in the form of the physical Passat vehicle and photos thereof, documentation regarding the Passat that was before the Patent Office in prosecution, and indicia on the face of the Carfax Report—constitutes clear and convincing evidence that the Passat qualifies as prior art under § 102(b).

As the undersigned noted in Order No. 26, the physical Passat vehicle and photographs thereof (RPX-0001), as well as sales papers from the most recent purchase of the Passat corroborates the accuracy of many of the entries on the Carfax Report, including the VIN number, make, model, current mileage, state of most recent sale, and identity of most recent dealership. *See, e.g.*, RX-0059.1, 9; RX-0714.1 (sale papers identifying the VIN, make, model, model year, mileage, and A&R Automotive dealership); *see also* Order No. 26. The sales papers also include a damage disclosure statement, executed under threat of "civil and/or criminal liability" that the Passat has not been damaged to the extent of more than 25% of its value, salvaged, flooded, reconstructed, or recovered after a theft, which is consistent with other entries on the Carfax Report. *Compare* RX-0059.1, 2 *with* RX-0714.6. Moreover, although Complainants argue that "there is no evidence regarding how Carfax derives this type of information," the face of the report lists a "source" for each entry, including the "Connecticut Motor Vehicle Dept." for the October 4, 2005 entry indicating a title issuance and "First owner reported." RX-0059.3. The face of the report also indicates that the "First Owner" is "[w]hen the first owner(s) obtains a title from a Department of Motor Vehicles as proof of ownership," that "Title Issued" means that "[a] state issues a title to provide a vehicle owner with proof of ownership," and that "New Owner Reported" refers to "[w]hen a vehicle is sold to a new owner, the Title must be transferred to the new owner(s) at a Department of Motor Vehicles." RX-0059.9. The face of the document, then, indicates that the source of the October 4, 2005 entry is the Connecticut Motor Vehicle Department, and that the Carfax Report relies on records filed with a state's DMV to generate entries regarding title issuance and new owners. In addition, as Respondents note, *see* RRB at 18, the Carfax Report entries in 2005 are internally consistent in terms of mileage. The Carfax Report includes entries offering the vehicle for sale on August 16,

2005, a service on August 19, 2005 with a mileage of 2, a service on September 12, 2005 with a mileage of 5, and then a title issued on October 4, 2005 with a mileage of 198. RX-0059.3.

In addition, evidence in the record indicates that 2006 model year Passat vehicles with hot-stamped B-pillars were generally available more than a year prior to the filing of the priority application on October 30, 2006. In an Information Disclosure Statement (IDS) dated June 4, 2019, the applicant identified a "Self-study programme" for the 2006 Volkswagen Passat, which the applicant identified as dated March 2005. *See* JX-0003.2040, 2043; *see also Valve Corp.*, 8 F.4th at 1375 (crediting applicant's identification of date of reference in an IDS, noting "[t]he IDS is significant here, not because of its inclusion of the Burns article by the applicant, but because of the applicant's characterization of the Burns article as being dated 2010, which is before the critical date of each patent").[83] The manual, entitled "Self-study programme 339: The Passat 2006" identifies the B-pillar of the 2006 Passat as being manufactured from "ultra-high-strength, hot-formed steel panels."[84] JX-0003.2261; RX-0008 (same document).

Accordingly, much of the content of the Carfax Report—including the make, model, mileage, VIN number, current mileage, state of sale, dealership information of the most recent sale, and damage information—has been shown by evidence in the record to be accurate and/or corroborated.[85] The source of at least the October 4, 2005 "Title Issuance" entry is identified as a government agency, and the 2005 entries are internally consistent in terms of mileage. Vehicles

[83] The Federal Circuit in *Valve Corp.* expressly rejected ArcelorMittal's argument that relying on the identification of the dates of prior art references identified in an IDS violates the rule that inclusion in an IDS is not an admission that a reference is prior art. *Compare id.* (distinguishing *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 866 (Fed. Cir. 2010)) *with* CRB 26 n.9.

[84] Although ArcelorMittal argues that the self-study reference addresses the European Passat, CRB at 34 n.12, apparently based on the shape of the license plate shown, the document itself indicates that vehicles "for all markets, from Japan to North America" are manufactured in the Zwickau/Mosel plant. JX-0003.2256.

[85] ArcelorMittal did not object to admission of the sales papers in RX-0714.

of the same model year and make were also identified as containing a hot-stamped B-pillar in a manual the applicant identified in an IDS as dating to March 2005. ArcelorMittal has not identified any contrary evidence.

The disclaimers on the face of the Carfax Report do not undermine the showing of reliability and accuracy. The disclaimers indicate that "not all accidents / issues are reported to Carfax," "[o]ther information about this vehicle, including problems, may not have been reported to CARFAX," and that "CARFAX DEPENDS ON ITS SOURCES FOR THE ACCURACY AND RELIABILITY OF ITS INFORMATION. THEREFORE NO RESPONSIBILITY IS ASSUMED BY CARFAX OR ITS AGENTS FOR ERRORS OR OMISSIONS." RX-0059.1, 9. As discussed above, the source of the October 4, 2005 entry is identified as the Connecticut Motor Vehicle Department, and the October 4, 2005 entry does not involve an "accident," "problem," or "issue" that the disclaimers indicate may have been omitted. Moreover, the "Title History" portion of the Carfax Report is "Guaranteed," indicating confidence in title information obtained from a state department of motor vehicles. *See* RX-0059.2 ("CARFAX guarantees the information in this section"); *id.* ("If you find that any of these title problems were reported by a DMV and not included in this report, you may qualify [for a buyback guarantee]."). There is no evidence or indication that title information obtained from state DMVs, such as that in the October 4, 2005 entry, is inaccurate. *See, e.g.*, *Epstein*, 32 F.3d at 1566 (crediting hearsay evidence of public use and on sale dates where "we have no reason to believe that the abstracts and the statements of 'release' and 'first installed' appearing in the abstracts are inaccurate or

that the authors of the statements are untrustworthy. There is nothing on the face of the documents that suggests the information has been altered in any way.").[86]

Taken together, the totality of the evidence shows that the Carfax Report is reliable and accurate as to title information, and the totality of the evidence thus constitutes clear and convincing evidence that the tested Passat was on sale in the United States at least as of October 4, 2005.

2. Whether the B-Pillar is Original to the Passat

Respondents had sample coupons from the Passat's B-Pillar, which is a part of the "body in white," the "structural body parts of a car," to which "pretty much everything is connected to," extracted and tested. *See* Tr. (Fekete) at 463:4-17 (describing that the engine, transmission, suspension, and interior pieces are connected to the body in white), 465:2-4 ("The B-pillar is the pillar between the front and rear door, and that pillar, among other things, protects you from impact intrusion in a side impact."); RIB at 71.

ArcelorMittal argues that Respondents have not proved by clear and convincing evidence that the tested B-pillar is original to the Passat. CIB at 74. ArcelorMittal argues that "neither VinFast nor Dr. Brown conducted any discovery, investigation, or analysis to establish that the tested parts were originally part of the vehicle as allegedly sold in 2005." CIB at 74.

[86] *Cf. In re Parra*, 483 B.R. 752, 769, 760 (Bankr. D.N.M. 2012) (permitting testimony regarding Carfax reports as evidence of vehicle title history and noting "CarFax reports are commonly used in the car sales industry to obtain information about a vehicle's title history"); *Jes Solar Co. v. Matinee Energy, Inc.*, No. CV 12-626 TUC DCB, 2015 WL 10939972, at *3 (D. Ariz. Mar. 30, 2015) (citing Carfax report as evidence of vehicle ownership in domicile jurisdictional dispute), *aff'd in part sub nom. Jes Solar Co. Ltd. v. Tong Soo Chung*, 725 F. App'x 467 (9th Cir. 2018); *United States v. 2014 NISSAN ALTIMA 2.5L VIN 1N4AL3AP9EC195679*, 853 F. App'x 27, 29 (7th Cir. 2021) (in appeal of civil forfeiture proceedings, citing "CarFax and VIN vehicle history reports" produced by the government as support that the alleged owner of seized vehicle was not an owner); *Smith v. TRW Auto. U.S., LLC*, No. CV 18-0995, 2020 WL 1667025, at *5 (W.D. La. Apr. 3, 2020) (relying on "CarFax Vehicle History Report" to identify when and where vehicle was "purchased by the end consumer" in determining personal jurisdiction).

ArcelorMittal argues that Respondents cannot presume without evidence that parts of a used car are original, and that the Carfax Report expressly identifies that it may not include all accidents or issues. CIB at 74-75.

Respondents, in opposition, state that "common sense" indicates that the "structural elements of a car welded to form its body is not something that gets replaced over the life of a car." RRB at 19. Respondents also argue that it is apparent from photographs of the car that the B-pillar of the Passat has not been replaced, as replacing the B-pillar would have involved cutting out and re-welding which, Respondents contend, would have left "significant visual deformities."[87] RRB at 20-22. Respondents also note that ArcelorMittal did not depose Mr. Bartosek, who conducted the teardown, or inspect the Passat during discovery. RRB at 23.

Upon consideration of the evidence of record and the submissions of the parties, the undersigned finds that there is clear and convincing evidence that the B-pillar is original to the Passat.

[87] On April 16, 2025, ArcelorMittal filed a Motion to Strike portions of Respondents' reply post-hearing brief that it contends are "brand-new," including arguments that the tested portions are original based on "common sense," visual inspection of the (unobjected-to) photographs of the Passat, and Dr. Brown's testimony that he personally examined the Passat. *See* Mot. Dkt. No. 1402-023 ("Mot. to Strike"). ArcelorMittal argues that it was prejudiced because it did not have the opportunity to cross-examine witnesses, to introduce evidence that replacement B-pillars can be obtained on the open market, to inspect the alleged factory-original stickers, or to move to strike Dr. Brown's testimony about his inspection of the Passat. Mem. at 3-5; Reply, EDIS Doc. ID 850198. Respondents, in opposition, characterized the arguments as responsive to arguments that ArcelorMittal raises for the first time in post-hearing briefing, and permissible elaboration on its long-standing contention that the Passat is invalidating prior art. Resps. Opp., EDIS Doc. ID. 849861 at 3-5. The undersigned hereby DENIES the Motion with respect to the Passat arguments. The photographs were admitted into evidence without objection, the portion of Dr. Brown's testimony to which ArcelorMittal objects was solicited on cross by ArcelorMittal (*see* Tr. (Brown) at 949:12-22), and the arguments are permissible elaboration on Respondents' contention that the tested portions of the B-pillar are prior art under § 102(b). In addition, ArcelorMittal's claims of prejudice from an inability to inspect the stickers on the Passat are of ArcelorMittal's own making, as the Passat—including the stickers—was available for inspection during discovery, but ArcelorMittal chose not to inspect the Passat. *See* RRB at 23. Accordingly, Mot. Dkt. No. 1402-023 is DENIED-IN-PART. (The other portions of the Motion to Strike are discussed in connection with the issues to which they pertain. *See infra* Parts VIII.C.2-3) Additionally, the undersigned notes that the decision here regarding whether the B-pillar has been shown to be original does not require any of the challenged arguments.

As Dr. Fekete, ArcelorMittal's expert explained, the B-pillar in a vehicle is part of the "body in white," which is the internal "structural body parts of a car," to which "pretty much everything is connected to." *See* Tr. (Fekete) at 463:4-17 (describing that the engine, transmission, suspension, and interior pieces are connected to the body in white), 465:2-4 ("The B-pillar is the pillar between the front and rear door, and that pillar, among other things, protects you from impact intrusion in a side impact."); Tr. (Raabe) at 104:6-17 ("The body-in-white is the skeleton we have around the area of the driver and the passenger in order to give sort of a safety area for crash, mainly for crash."). Consistent with Dr. Fekete's description of the body in white as connected to many other key vehicle parts, the extraction of the B-pillar by a vehicle teardown professional[88] involved removing the interior seats and finishing, removing the doors, cutting away the exterior metal skin with an angle grinder, and then cutting out the B-Pillar. RX-0085 (Bartosek Decl.) at ¶¶ 5-6. The 2024 sales documentation for the Passat included a certification executed under penalty of "civil and/or criminal liability" that the Passat had not been "damaged by collision or other occurrence to the extent that damages exceed 25% of its value and the time of the collision or other occurrence" and that the vehicle has not been salvaged or reconstructed.[89] RX-0714.6. ArcelorMittal has not identified any contrary evidence. The evidence indicates that it would be highly unlikely—in view of Dr. Fekete's testimony regarding the structural role of the B-pillar and the level of teardown required to extract a B-pillar—that the B-pillar could have been replaced without some indication in the title history or damage disclosure in the most recent sale. *Cf. In re Epstein*, 32 F.3d 1559, 1567 (Fed. Cir. 1994) (finding

[88] Mr. Bartosek estimates he has been involved in over 80 automotive teardowns. RX-0085 at ¶ 1.

[89] "Reconstructed vehicle" is defined as "a motor vehicle of a type that has been ***materially altered from original construction*** due to removal, addition, or substitution of new or used essential parts." *Id.* (emphasis added); *see also* RX-0059.2 (guaranteeing that the car does not have a salvage, junk, or rebuilt title).

prior art features had not changed because "it appears to us that the features relied upon are not of the type that would be altered over the life of the product, either to upgrade the system or to eliminate existing bugs in the system. To the contrary, the relatively broad features relied upon by the examiner relate to the central purposes of the systems in which the features appear."). Given the evidence in the record regarding the nature of the B-pillar and the difficulty of extraction—and the lack of contrary evidence—the undersigned finds that the B-pillar is original to the Passat.

3. Reliability of Testing Methodology and Analysis

Respondents' testing expert, Dr. Bradley, received certain sample coupons from the B-pillar of the Passat, prepared the samples for SEM imaging, imaged the samples, measured thicknesses of the coating, performed EDS composition measurements, and performed line scans. Tr. (Bradley) at 753:19-758:8. He also sent one of the sample coupons to IMR Testing Labs for measurement of the tensile strength and trace element composition of the base steel. *Id.* Dr. Brown relied upon this testing for his opinion that the Passat anticipates the Asserted Patents.

ArcelorMittal argues that Dr. Bradley's testing methodology was flawed because Dr. Bradley "employed no testing methodology regarding which samples he would test," and "arbitrarily tested" only some of the samples sent to him. CIB at 76. ArcelorMittal argues that certain coupons—notated as BL7—were tested for mechanical strength and base steel composition—while others—notated as BL1 and BL5—were analyzed with SEM images, EDS analysis, thickness measurements, and line scans. CIB at 76. ArcelorMittal argues that the testing results are unreliable because "no scientific methodology allows for the selective reporting of results while hiding the remainder of results." CIB at 77 (citing *Clark v. Takata Corp.*, 192 F.3d 750, 759 n.5 (7th Cir. 1999) ("A supremely qualified expert cannot waltz into the courtroom and

render opinions unless those opinions are based upon some recognized scientific method and are reliable and relevant under the test set forth by the Supreme Court in *Daubert*."); CRB at 34. ArcelorMittal also argues that Dr. Brown and Dr. Bradley "did not consistently use the same SEM for all limitations of the independent claims," and thus the anticipation analysis involves improper "mixing and matching." CIB at 78 (citing, e.g., *NetMoneyIn, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008)). Specifically, ArcelorMittal argues that Dr. Brown improperly (1) used a different SEM image of the BL1 coupon to generate a line scan for purposes of Limitation [1b]; (2) relied on testing of coupon BL7 for dependent claims 3, 4, 7, and 8 of the '602 patent and dependent claims 16 and 17 of the '227 patent, and (3) relied on thickness measurements from the BL5 coupon for dependent claims 8 and 11 of the '227 patent. ArcelorMittal argues that the use of different coupons is problematic because B-pillars may be comprised of multiple components welded together. CIB at 80; CRB at 35-39.

Respondents, in reply, argue that ArcelorMittal's testing methodology criticisms are "irreconcilable" with its infringement and technical domestic industry positions and the analytical framework employed by Dr. Fekete. RRB at 23. Respondents argue that Dr. Fekete, on infringement, argued that testing of a single sample coupon was sufficient to show infringement of an entire part, and requiring a different standard on invalidity would violate the axiom that "[t]hat which infringes, if later, would anticipate, if earlier." RRB at 24 (citing *Peters v. Active Mfg. Co.*, 129 U.S. 530, 537 (1889)). In response to ArcelorMittal's "mixing and matching" arguments, Respondents assert that there is no requirement for EDS analysis to be performed on the same section of the BL1 sample, and that after preparation of the puck for imaging, at most, the EDS analysis and SEM micrographs were taken approximately 1 centimeter apart. RRB at 26. Respondents also point out that a requirement that the exact same portion of a sample must

be analyzed with SEM micrographs and EDS analysis would render Dr. Fekete's infringement analysis unreliable, as Dr. Fekete relied on similarly "mixed and matched" samples. RRB at 28-30 (identifying that for BIW30037022, Dr. Fekete used CX-0846C.1 SEM image but for thickness measurements, relied upon CX-0846C.45, 8, 51, 39, and 42), RRB at 34 (identifying that for BIW30037022, Dr. Fekete relied on spot EDS taken from a different SEM image than relied upon to generate line scans or to show the claimed four-layer structure). Respondents also argue that there is no evidence that the B-pillar in the Passat is not unitary, or that it is made with different base steels in different regions. Respondents also note that because the base steel analysis is "destructive," Dr. Fekete's own testing protocol uses a different "new, single coupon from the subject hot-stamped component" for base steel composition testing, such that the use of a different coupon to perform base steel testing is consistent with ArcelorMittal's infringement contentions. RRB at 39 (citing CX-0092C.7). Similarly, hardness testing is destructive, according to Respondents, and a sample prepared for SEM imaging is embedded into an epoxy puck. Accordingly, Respondents argue, the same coupon cannot be used to test hardness. RRB at 40.

Upon consideration of the evidence of record and the arguments of the parties, the undersigned first finds that (1) the testing and analysis of different portions of the same sample coupon (BL1) of the Passat to show anticipation of the independent claims; and (2) the use of a separate coupon (BL7) for destructive testing does not involve improper "mixing and matching," as Dr. Bradley's methods were consistent with the analytical framework employed by Dr. Fekete and ArcelorMittal for purposes of infringement and technical domestic industry. As to the use of a separate coupon (BL5) for purposes of showing anticipation of the layer thickness relationships in the additional limitations of dependent claims 8 and 11 of the '227 patent, however, the

undersigned finds that there is evidence in the record that the relationship of the thickness of the layers (e.g., that layer (a) is thicker than layer (b)) varies materially between coupons in the Passat B-pillar, and thus the use of two separate coupons fails to show anticipation by clear and convincing evidence.

Dr. Bradley was admitted without objection as an expert in microscopy and preparation of samples for electromicroscopy. Tr. at 744:16-745:1. The sample preparation methodologies and analysis types used by Dr. Bradley—*e.g.*, SEM micrographs, EDS analysis, line scans, thickness measurements—are consistent with those used by Dr. Fekete on infringement. *See, e.g.*, Tr. (Bradley) at 749:1-752:7 (describing preparation of coupons for SEM imaging), 756:13-21 (describing generation of line scans), 755:16-756:12 (describing generation of composition data) *with* Tr. (Fekete) at 474:11-475:22 (describing preparation of coupons for SEM imaging), 482:2-19, 480:1-13 (describing generation of composition data), 480:14-481:7 (describing generation of line scans).

Moreover, Respondents' testing protocols are consistent with the analytical framework and testing protocols used by Dr. Fekete and ArcelorMittal as to infringement and technical domestic industry. As Respondents demonstrate, Dr. Fekete's testing for infringement and technical domestic industry also relied on analysis and SEM images from different portions of the same coupons. *See* RRB at 26-41. The undersigned also credits Respondents' statement that it is impossible to perform destructive testing (e.g., as required for hardness and base steel composition) on the same sample used for SEM microscopy, because SEM microscopy sample preparation requires embedding the sample into epoxy pucks prior to imaging. *See* RRB at 41; Tr. (Fekete) at 475:3-22; Tr. (Bradley) at 749:3-752:7. Respondents' assertion is supported by Dr. Fekete's testing protocols, which require the creation of different coupons from the various

hot-stamped parts for destructive testing. *See, e.g.*, CX-0092C.7 (requiring the creation of a "new, single coupon from the subject hot stamped component" for base steel composition testing). The destructive testing of the BL7 coupon[90]—as opposed to the BL1 coupons used for SEM imaging—is consistent with Dr. Fekete's testing protocol for infringement and technical domestic industry, and does not constitute an unreliable methodology or improper "mixing and matching."[91]

The argument that Dr. Bradley's methodology generally should be accorded "no weight" because every coupon removed from the B-pillar was not subject to each type of analysis is not persuasive.[92] Dr. Brown principally relies on Dr. Bradley's testing of the BL1 coupon.[93] *See* CIB at 76 (Dr. Brown relies on BL1 for every independent claim limitation of the '602 patent); RDX-0002C.59 (citing RX-0086, which is BL1, *see* RDX-0004C.29), .61 (citing CX-0083C.19, which

[90] The undersigned also finds that the evidence of record does not support ArcelorMittal's argument that the BL7 coupon may be comprised of a different base steel. *See* CIB at 80. The cited testimony from Dr. Fekete is specific to a particular [redacted] which includes an A-pillar and a B-pillar, among other parts—that was comprised of multiple pieces of steel, which were identifiable by visual "laser welds" and that the particular B-pillar at issue included "an inner and outer panel" and "likely some reinforcements." *See* Tr. (Fekete) at 463:4-465:12; CDX-0003C.18-19; *see also* Tr. (Fekete) at 473:18-7 (testifying about Jeep Door Ring (Gestamp)). He did not testify that all B-pillars are comprised of different pieces of base steel, and no expert opined that the B-pillar in the Passat included laser welds or different base steel. *See* RPX-0001.7, 8. Similarly, Dr. Drillet's testimony regarding the use of Ductibor in the lower portions of B-pillars is irrelevant, as Ductibor was not available until 2012, RRB at 38 (citing CX-0561C.19). Moreover, although Dr. Fekete instructed the labs to individually test each hot-stamped "component" of each part, he presented a single base steel composition result for each part, not each component making up the parts. *See, e.g.*, CDX-0003C.228. There is no evidence that the base steel varied across the Passat B-pillar.

[91] Nor did ArcelorMittal present any contravening test results.

[92] Dr. Bradley testified that he received 7 coupons of the Passat (BL1-BL5, BL7, and BL9), captured SEM images of 5 coupons (BL1-BL5), performed additional line scan and EDS analysis on 1 coupon (BL1), performed thickness measurements on 2 coupons (BL1 and BL5), sent 1 coupon (BL7) for destructive testing, and did not test 1 coupon (BL9). Tr. (Bradley) at 773:8-10, 773:17-25, 774:1-3, 777:1-10, 778:17-20, 779:7-11.

[93] The exceptions are the destructive testing of the BL7 coupon, which as discussed above is consistent with Dr. Fekete's testing protocol and analysis for claims 3, 7, and 8 of the '602 patent and claims 16, 17, and 24 of the '227 patent; and the reliance on the BL5 coupon for the thickness relationship limitations of claims 8 and 11 of the '227 patent, which is discussed below.

is identical to RX-0173, which is BL1, *see* RDX-0004.27-28). Nor, as discussed above, was the fact that destructive testing was performed on a separate coupon improper, as it is required by the nature of the testing and consistent with Dr. Fekete's testing protocol. *See, e.g.*, CX-0092C.7. Moreover, as discussed above, Dr. Fekete testified that analysis of a single coupon is standard in the industry to qualify a production run of hot-stamped components. *See* CX-0730C.1, 3; Tr. (Fekete) at 519:19-520:12 ("In order to know whether a part met all of the specification requirements in a process that was -- you know, a production process that was running, you might take, you know, one or two samples per some unit of time, like, you know, once or twice per shift or once or twice per hour, depending on the part, and what you're trying to understand."); CDX-0003C.116-17, 120. As the Federal Circuit has observed, "one cannot interpret a patent one way for the validity analysis and a different way for the infringement analysis." *See, e.g.*, *A. G. Design & Assocs. LLC v. Trainman Lantern Co.*, 271 F. App'x 995, 999 n.4 (Fed. Cir. 2008) (noting that "arguments as to infringement and validity respectively seem inherently inconsistent"); *Mycogen Plant Sci. v. Monsanto Co.*, 243 F.3d 1316, 1324 (Fed. Cir. 2001) ("The tests for infringement and anticipation are very similar, and '[t]hat which would literally infringe if later in time anticipates if earlier than the date of invention.'" (quoting *Lewmar Marine, Inc. v. Barient, Inc.*, 827 F.2d 744, 747 (Fed. Cir. 1987)); *cf. U.S. Ethernet Innovations, LLC v. Texas Instruments Inc.*, No. 6:11-CV-491, 2014 WL 2740383, at *3 (E.D. Tex. June 15, 2014) (in bifurcated invalidity and infringement trial, prohibiting patentee from taking "a position at the infringement trial that is clearly inconsistent with the position it took at the invalidity trial").

Moreover, the use of different SEM images of the same coupon does not constitute improper "mixing and matching" of embodiments. ArcelorMittal's citation to precedent

regarding improper mixing and matching are inapposite, as they relate to combining different examples, rather than looking at different portions of the same component. For example, in *Certain Fitness Devices*, anticipation was not shown by the combination of embodiments shown in two different figures in a reference which disclosed different methods based on different inputs (and, even still, did not fully disclose the claimed invention). *Certain Fitness Devices, Streaming Components Thereof, & Sys. Containing Same*, Inv. No. 337-TA-1265, Init. Det., 2022 WL 7027226, at *107-09 (Sept. 9, 2022). In *Arkley*, anticipation was not found based on an argument to combine two different examples such that "*if* the acid [disclosed in example 10] is first selected and *then* carefully reacted with a particular tertiary amine *which also must be selected*." *Application of Arkley*, 455 F.2d 586, 588 (C.C.P.A. 1972) (emphasis original). Here, there are not multiple embodiments, multiple examples, or multiple parts, or—for purposes of the independent claims—even multiple sample coupons.

As to the use of a different coupon (BL5) for purposes of assessing the additional limitations of claims 8 and 11 of the '227 patent, the undersigned finds that Respondents have not shown anticipation by clear and convincing evidence. Thickness measurements of the BL1 coupon—upon which Dr. Brown relied for the limitations of the claims from which claims 8 and 11 depend, and for all other dependent claims related to layer thickness[94]—do not meet the additional limitations of claim 8 and claim 11, which require that the thickness of layer (a) is greater than the thickness of layer (b). *See* '227 patent, cls. 8, 11; RDX-0004C.24 (identifying the average thickness of layer (a) in the BL1 coupon as 9.4 microns and the average thickness of

[94] For example, dependent claims 2, 4, and 5 of the '227 patent require layer (a) to have a certain thickness (claims 4 and 5) or to have a certain thickness relative to the entire coating (claim 2). Dr. Brown relied on the BL1 coupon for each of these limitations. *See* Tr. (Brown) at 849:4-19; RDX-0002C.98, 99. Similarly, claims 9, 10, and 13 require layer (a) to have a certain thickness relative to layers (c) and (d). Dr. Brown also relied upon the BL1coupon for each of these limitations. *See* Tr. (Brown) at 850:21-851:10; RDX-0002C.102.

layer (b) as 15.4 microns). Instead, the BL5 coupon thickness measurements are asserted to meet the additional limitations, *see* RDX-0004C.26 (identifying the average of thickness of layer (a) in the BL5 coupon as 9.5 microns and the average thickness of layer (b) as 9.0 microns). Respondents do not address or respond to ArcelorMittal's arguments criticizing the use of a different coupon (BL5) for dependent claims 8 and 11 of the '227 patent. *See* RRB at 37-41 (addressing dependent claim analysis only for claims 3, 7, and 8 of the '602 patent and claims 16, 17, and 24 of the '227 patent); CIB at 81-82 (arguing that Dr. Brown "incorrectly mixed and matched" for dependent claims 8 and 11 of the '227 patent). Rather, Respondents argue that "Dr. Brown relies on the same SEM image for both the layer identification as well as the layer and coating thickness measurements." *See* RRB at 32, 68. This is not true, however, for claims 8 and 11 of the '227 patent. Moreover, on infringement—as Respondents concede—the testing relied upon by Dr. Fekete (for all but the destructive testing, as discussed above) is from the same coupon. *See* RRB at 31 (citing Dr. Fekete's thickness measurements of "coupon i" of BIW30037022), 27 (citing Dr. Fekete's line scans of "coupon i" of BIW30037022), 33 (citing Dr. Fekete's spot EDS data from "coupon i" of BIW30037022). Taking into account the evidence as a whole, Respondents have not—by clear and convincing evidence—established anticipation of claims 8 and 11 of the '227 patent.[95]

Accordingly, apart from claims 8 and 11 of the '227 patent, ArcelorMittal's arguments regarding the weight that should be accorded to the testing methodology employed by Dr. Bradley or the analysis performed by Dr. Brown do not persuasively undercut Respondents'

[95] However, because claims 8 and 11 of the '227 patent were only asserted for purposes of infringement, there is no showing of technical domestic industry for these two claims. Accordingly, as discussed *infra*, all claims relied upon by ArcelorMittal for purposes of technical domestic industry have been shown to be invalid in view of the Passat.

showing of anticipation by clear and convincing evidence, as discussed in the limitation-by-limitation analysis below.

4. The '602 Patent

Respondents contend that each and every claim asserted either for infringement and/or the technical prong of the domestic industry requirement is invalid as anticipated by the Passat. For the reasons explained below, Respondents have shown, by clear and convincing evidence, that claims 1-4, 7-9, 10, 18, 20-22, 24, and 26 of the '602 patent are anticipated by the Passat.

a. Claim 1

i. Claim Limitation [1pre]: A precoated steel product comprising:

The parties appear to agree that the preamble is limiting. *See* CIB at 37; RIB at 74. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the Passat is a precoated steel product. *See* Tr. (Brown) at 835:14-19; RDX-0002C.58; RX-0085.6.

Accordingly, Respondents have shown that the Passat meets Limitation [1pre] of the '602 patent by clear and convincing evidence.

ii. Claim Limitation [1a]: a strip of base steel having a first side and a second side; and

ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the Passat includes a strip of base steel with a first and second side. *See* Tr. (Brown) at 835:20-836:2; RDX-0002C.59; RX-0086.

Accordingly, Respondents have shown that the Passat meets Limitation [1a] of the '602 patent by clear and convincing evidence.

iii. Claim Limitation [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:

ArcelorMittal does not dispute that this limitation is met by the Passat, other than to assert that Dr. Brown's reliance on EDS analysis conducted on a different SEM image of the BL1 coupon constitutes improper "mixing and matching" in an anticipation analysis. *See* CIB at 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. Moreover, the evidence demonstrates that the Passat includes a coating, and that the coating results from interdiffusion between the base steel and an aluminum or aluminum alloy pre-coating. *See* Tr. (Brown) at 836:3-837:2; RDX-0002C.60-61; RX-0086; RX-0173; RDX-0004C.28.[96]

Accordingly, Respondents have shown that the Passat meets Limitation [1b] of the '602 patent by clear and convincing evidence.

[96] RDX-0002C.61 cites to CX-0083C.19, which was admitted as RX-0173 in a native .bcf format. The excerpted portions of RX-0173 appear at RDX-0004C.28.

iv. Claim Limitations [1c]-[1f]: (a) an interdiffusion layer having a first mean iron composition, (b) an intermediate layer having a second mean iron composition different from the first mean iron composition, (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 (d) a superficial layer having a fourth mean iron composition different from the third mean iron composition,

ArcelorMittal disputes whether Respondents have met their burden to show the claimed four-layer structure. CIB at 82; CRB at 39-40. ArcelorMittal argues that with respect to the "compositional relationship" required, Dr. Brown "offers conclusory testimony" and "provides no explanation of how these compositions were derived" in the table excerpted in his demonstratives. CIB at 82. To the extent that Dr. Brown relies upon Dr. Bradley's analysis, ArcelorMittal argues that Dr. Bradley "did not consistently measure a layer" because in his EDS analysis he did not define a layer "every time the aluminum (blue) and iron (red) lines intersected," making his analysis "arbitrary and inaccurate." CIB at 82; CRB at 39. ArcelorMittal also argues that Dr. Bradley's analysis shows two layers above "layer 3" such that there is no superficial layer. CIB at 82-83. ArcelorMittal, relying on Dr. Raabe, also contends that the existence of a horizontal crack in the Passat "impacted the formation of the intermetallic layer" and thus "more information is needed to determine whether the claimed intermetallic layer is formed." CIB at 84 (citing Tr. (Raabe) at 84:1054:4-22, 1179:15-1181:15)l; CRB at 39-40.

Respondents, in opposition, argue that Dr. Bradley's identification of layers was based on both the "intersection" of the iron and aluminum in the line scan and his visual inspection of the SEM micrograph from which the line scan was derived. RRB at 42 (citing Tr. (Bradley) at 784:22-785:2, 756:17-19). Moreover, Respondents argue that Dr. Brown relied primarily on the SEM image to show the existence of the claimed layers, and that because the image colors

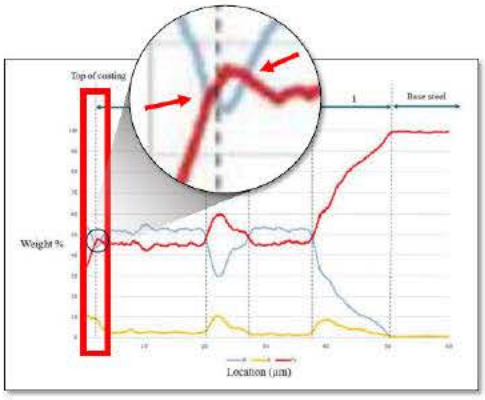
provide information about the composition, it permits the identification of layers with different compositions. RRB at 44 (citing CIB at 108); Tr. (Brown) at 837:3-838:8. Respondents also argue that ArcelorMittal waived the argument that the Passat lacks a superficial layer by failing to raise it in their pre-hearing brief, and that, even if considered, line scans used to demonstrate infringement and technical domestic industry would then also show alleged "additional" layers. RRB at 45-47 (citing CDX-0003C.52, 193). As to the "horizontal crack" argument, Respondents argue that the claimed layers "did not just materialize out of thin air" and that it is undisputed that hot-stamping USIBOR causes interdiffusion that leads to layer creation. RRB at 48. Additionally, Respondents argue that similar horizontal cracks appear in SEM micrographs relied upon to show infringement and technical domestic industry. RRB at 49-50.

Upon consideration of the evidence of record and the arguments of the parties, the undersigned finds that Respondents have shown that the Passat meets Limitations [1c]-[1f] of the '602 patent by clear and convincing evidence.

First, Dr. Bradley, not Dr. Brown, testified as to how the mean compositions identified in RDX-0002C.62-65 were derived. *See* Tr. (Bradley) at 755:16-756:12; RDX-0004C.27. The EDS analysis performed by Dr. Bradley to obtain the compositional measurements used a similar x-ray detection method as that relied upon by Dr. Fekete for purposes of infringement and technical domestic industry, and there is no evidence that Dr. Bradley's spot EDS analysis is less accurate or reliable than the spot EDS analysis relied upon by Dr. Fekete. *Compare, e.g.*, Tr. (Fekete) at 482:2-19 ("[W]e took what we call spot measurements. That's where you are taking an electron beam, and you're just planting it on the sample and taking x-ray measurements there to get that chemical composition of the whole coating, which would be a mean composition.") *with* Tr. (Bradley) at 755:18-25 ("[T]he x-ray detector [] collects a spectrum of every pixel in the

image. In this case, there are 1200-by-1600 pixels in that image. Once you've done that, you can go and you can ask—you can draw a box or an area, as you see in the image labeled 1 through 4, and you can extract every spectrum from each pixel in that particular box.").

As to the identification of layers, the undersigned finds that Dr. Brown—like Dr. Fekete—relied on SEM micrographs, line scans,[97] and spot EDS analysis to identify the claimed four-layer structure. *See, e.g.*, RDX-0002C.61-65. The alleged inconsistency in identifying layers in the line scan does not address the other evidence Dr. Brown relied upon to identify the claimed layers, including the SEM images or the spot EDS analysis. Moreover, although ArcelorMittal argues that the alleged inconsistency in the identification of the layers in the line scan renders the mean composition analysis inaccurate, there is no evidence or argument that choosing the slightly different inflection point identified by Dr. Raabe (at right) would place the mean composition outside the claimed ranges. CDX-0004C.58. Finally, as to the alleged existence of an additional layer above the superficial layer based on the line scan, ArcelorMittal's argument is (1) unsupported by expert testimony, (2) contrary to Dr. Fekete's analysis of line scans on infringement and technical domestic industry analysis, *see* RRB at 47-47 (collecting examples), and (3) ignores Dr. Brown's analysis of other evidence—including spot EDS analysis and SEM micrographs—in evaluating the existence of the claimed four-layer structure.



[97] Respondents argue that Dr. Brown relied on the line scan only to show that the coating was the result of interdiffusion, RRB at 43. A review of Dr. Brown's testimony, however, indicates that he used the line scan to identify an "interdiffusion layer" and the line scan is labeled with "1, 2, 3 and 4," denoting the various claimed layers. Tr. (Brown) at 836:15-837:2; RDX-0002C.61.

Finally, as to the "horizontal crack" argument, the undersigned finds Dr. Raabe's testimony on this point unpersuasive. Dr. Raabe testified that the existence of horizontal cracks in layer 2 (the "intermediate layer") "brought me to my doubts whether this is really reproducing the claims" because "that interdiffusion might be altered from the intention as sketched in the claims." Tr. (Raabe) at 1054:15-1055:17. Dr. Raabe also testified that he would need to know the "nature and composition of that layer [3]" to determine if the horizontal crack impacted the formation of the intermetallic layer. Tr. (Raabe) at 1180:18-1181:1. Dr. Raabe did not address the evidence in the record that provides the "nature and composition" of layer 3, namely, the line scan and spot EDS data relied upon by Dr. Brown. Dr. Brown testified persuasively that the line scan for the Passat was "a canonical representation of that interdiffusion process," and that each of the layers had a different mean composition. Tr. (Brown) at 836:15-837:2, 837:18-24. Dr. Brown's opinions that the layers in the Passat are the result of interdiffusion is consistent with Dr. Fekete's testimony that line scans and differing mean compositions are "evidence of the fact that interdiffusion is happening." Tr. (Fekete) at 512:8-21. Dr. Raabe's equivocal testimony regarding his "doubts" as to one of three primary pieces of evidence upon which Dr. Brown's analysis relies is, accordingly, unpersuasive.

Accordingly, Respondents have shown that the Passat meets Limitations [1c]-[1f] of the '602 patent by clear and convincing evidence. *See* Tr. (Brown) at 837:3-838:8; RDX-0002C.62-65; RX-0086; RDX-0004C.27-28.

v. Claim Limitation [1g]: wherein the coating has a thickness greater than 30 micrometers.

ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the Passat includes a

coating, and that the coating has a thickness of greater than 30 micrometers. *See* Tr. (Brown) at 838:9-18; RDX-0002C.66; RX-0086; RX-0004C.24.

Accordingly, Respondents have shown that the Passat meets Limitation [1g] of the '602 patent by clear and convincing evidence.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 1 of the '602 patent is anticipated by the Passat.

b. Claim 2

Claim 2 depends from claim 1, and requires in addition "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." '602 patent, cl. 2. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the Passat includes a "quasi continuous" layer (c) and (d). *See* Tr. (Brown) at 839:15-840:12; RDX-0002C.68.

Accordingly, Respondents have shown by clear and convincing evidence that claim 2 of the '602 patent is anticipated by the Passat.

c. Claim 3

Claim 3 depends from claim 1, and requires in addition "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." '602 patent, cl. 3. ArcelorMittal does not

separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. In addition, the evidence demonstrates that the base steel in the Passat includes the recited components by weight percentages. *See* Tr. (Brown) at 840:8-842:5; RDX-0002C.69-80; RX-0087.2.

Accordingly, Respondents have shown by clear and convincing evidence that claim 3 of the '602 patent is anticipated by the Passat.

d. Claim 4

Claim 4 depends from claim 1, and requires in addition "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." '602 patent, cl. 4. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. In addition, the evidence demonstrates that the base steel in the Passat

includes the recited components by weight percentages. *See* Tr. (Brown) at 842:6-22; RDX-0002C.80; RX-0087.2.

Accordingly, Respondents have shown by clear and convincing evidence that claim 4 of the '602 patent is anticipated by the Passat.

e. Claim 7

Claim 7 depends from claim 1, and requires in addition "wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42." '602 patent, cl. 7. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. In addition, the evidence demonstrates that the base steel in the Passat meets the recited weight ratio of titanium to nitrogen. *See* Tr. (Brown) at 842:23-843:6; CDX-0002C.81; RX-0087.2.

Accordingly, Respondents have shown by clear and convincing evidence that claim 7 of the '602 patent is anticipated by the Passat.

f. Claim 8

Claim 8 depends from claim 2, and requires in addition "wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42." '602 patent, cl. 8. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84; CRB at 32-40. For the same reasons discussed above, *supra*,

the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. As discussed above, Respondents have shown by clear and convincing evidence that claim 2 is anticipated by the Passat, and Respondents have shown that the additional limitation of claim 7—which is identical to the additional limitation of claim 8—is anticipated by the Passat.

Accordingly, Respondents have shown by clear and convincing evidence that claim 8 of the '602 patent is anticipated by the Passat.

g. Claim 9

Claim 9 depends from claim 1, and requires in addition "wherein the layer (a) has a thickness less than 15 micrometers." '602 patent, cl. 9. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, layer (a) has a thickness of less than 15 micrometers. *See* Tr. (Brown) at 843:7-23; RDX-0002C.82; RX-0086; RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 9 of the '602 patent is anticipated by the Passat.

h. Claim 10

Claim 10 depends from claim 1, and requires in addition "wherein the layer (a) has a thickness less than 10 micrometers." '602 patent, cl. 10. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, layer (a) has a thickness of less than 10 micrometers. *See* Tr. (Brown) at 843:7-23; RDX-0002C.82; RX-0086; RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 10 of the '602 patent is anticipated by the Passat.

i. Claim 18

Claim 18 depends from claim 1, and requires in addition "wherein the interdiffusion layer has a thickness of from 1 micron to 15 microns." '602 patent, cl. 18. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, the interdiffusion layer has a thickness of between 1 and 15 micrometers. *See* Tr. (Brown) at 843:7-23; RDX-0002C.82; RX-0086; RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 18 of the '602 patent is anticipated by the Passat.

j. Claim 20

Claim 20 depends from claim 1, and requires in addition "wherein the fourth mean iron composition is lower than the third mean iron composition." '602 patent, cl. 20. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the fourth mean iron composition in the Passat is lower than the third mean iron composition. *See* Tr. (Brown) at 843:24-844:7; RDX-0002C.83; RX-0086; RDX-0004C.27.

Accordingly, Respondents have shown by clear and convincing evidence that claim 20 of the '602 patent is anticipated by the Passat.

k. Claim 21

i. Claim Limitation [21pre]: A precoated steel product comprising:

Respondents assert that the Passat meets Limitation [21pre] for the same reasons as Limitation [1pre]. RIB at 85; Tr. (Brown) at 844:8-845:3; RDX-0002C.84. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1pre], the undersigned finds that the Passat meets Limitation [21pre]. Accordingly, Respondents have shown that the Passat meets Limitation [21pre] of the '602 patent.

ii. Claim Limitation [21a]: a strip of base steel having a first side and a second side; and

Respondents assert that the Passat meets Limitation [21a] for the same reasons as Limitation [1a]. RIB at 85; Tr. (Brown) at 844:8-845:3; RDX-0002C.84. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1a], the undersigned finds that the Passat meets Limitation [21a]. Accordingly, Respondents have shown that the Passat meets Limitation [21a] of the '602 patent.

iii. Claim Limitation [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:

Respondents assert that the Passat meets Limitation [21b] for the same reasons as Limitation [1b]. RIB at 85; Tr. (Brown) at 844:8-845:3; RDX-0002C.84. ArcelorMittal does not dispute that this limitation is met by the Passat, other than to assert that Dr. Brown's reliance on EDS analysis conducted on a different SEM image of the BL1 coupon constitutes improper

"mixing and matching" in an anticipation analysis. *See* CIB at 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. For the same reasons as discussed above with respect to Limitation [1b], the undersigned finds that the Passat meets Limitation [21b]. Accordingly, Respondents have shown that the Passat meets Limitation [21b] of the '602 patent.

iv. Claim Limitations [21c]-[21f]: (a) an interdiffusion layer having a first mean iron composition, (b) an intermediate layer having a second mean iron composition different from the first mean iron composition, (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 (d) a superficial layer having a fourth mean iron composition different from the first, second, and third mean iron composition,

The parties dispute this limitation. Respondents assert that the Passat meets Limitations [21c]-[21f] for the same reasons as Limitations [1c]-[1f], and because each of layers in the Passat has a different mean iron composition. RIB at 85; Tr. (Brown) at 844:8-845:3; RDX-0002C.84-85.

ArcelorMittal disputes that Respondents met their burden to show anticipation of Limitations [21c]-[21f] by the Passat for same reasons as Limitations [1c]-[1f]. *See* CIB at 75-84; CRB at 32-40.

For all the reasons discussed above with respect to Limitations [1c]-[1f], the undersigned finds that the Respondents have shown, by clear and convincing evidence, that the Passat meets Limitations [21c]-[21f].

Accordingly, Respondents have shown that the Passat meets Limitations [21c]-[21f] of the '602 patent.

v. Claim Limitation [21g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that the Passat meets Limitation [21g] for the same reasons as Limitation [1g]. RIB at 85; Tr. (Brown) at 844:8-845:3; RDX-0002C.84. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1g], the undersigned finds that the Passat meets Limitation [21g]. Accordingly, Respondents have shown that the Passat meets Limitation [21g] of the '602 patent.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 21 of the '602 patent is anticipated by the Passat.

l. Claim 22

Claim 20 depends from claim 21, and requires in addition "wherein the fourth mean iron composition is lower than the third mean iron composition." '602 patent, cl. 22. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 75-84; CRB at 32-40. As discussed above, Respondents have shown by clear and convincing evidence that claim 21 is anticipated by the Passat, and Respondents have shown that the additional limitation of claim 20—which is identical to the additional limitation of claim 22—is anticipated by the Passat.

Accordingly, Respondents have shown by clear and convincing evidence that claim 22 of the '602 patent is anticipated by the Passat.

m. Claim 24

i. Claim Limitation [24pre]: A precoated steel product comprising:

Respondents assert that the Passat meets Limitation [24pre] for the same reasons as Limitations [1pre]. RIB at 85-86; Tr. (Brown) at 845:4-846:22; RDX-0002C.86-90. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1pre], the undersigned finds that the Passat meets Limitation [24pre]. Accordingly, Respondents have shown that the Passat meets Limitation [24pre] of the '602 patent.

ii. Claim Limitation [24a]: a strip of base steel having a first side and a second side; and

Respondents assert that the Passat meets Limitation [24a] for the same reasons as Limitations [1a]. RIB at 85-86; Tr. (Brown) at 845:4-846:22; RDX-0002C.86-90. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1a], the undersigned finds that the Passat meets Limitation [24a]. Accordingly, Respondents have shown that the Passat meets Limitation [24a] of the '602 patent.

iii. Claim Limitation [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 or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards:

Respondents assert that the Passat meets Limitation [24b] for the same reasons as Limitations [1b]. RIB at 85-86; Tr. (Brown) at 845:4-846:22; RDX-0002C.86-90. ArcelorMittal does not dispute that this limitation is met by the Passat, other than to assert that Dr. Brown's reliance on EDS analysis conducted on a different SEM image of the BL1 coupon constitutes

improper "mixing and matching" in an anticipation analysis. *See* CIB at 75-84; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. For the same reasons as discussed above with respect to Limitation [1b], the undersigned finds that the Passat meets Limitation [24b]. Accordingly, Respondents have shown that the Passat meets Limitation [24b] of the '602 patent.

iv. Claim Limitations [24c]-[24f]: (a) an interdiffusion layer having a first mean aluminum composition, (b) an intermediate layer having a second mean aluminum composition different from the first mean aluminum composition, (c) an intermetallic layer having a third mean aluminum composition different from the first and second mean aluminum compositions, the third mean iron composition being higher than the second mean iron composition; and (d) a superficial layer having a fourth mean aluminum composition different from the first, second, and third mean aluminum composition, the second mean aluminum composition being greater than the third mean aluminum composition

The only difference between Limitations [24c]-[24f] and Limitations [1c]-[1f] is the specification of a mean aluminum composition for each of the claimed layers, rather than a mean iron composition. *See* Tr. (Brown) at 845:6-15; RDX-0002C.86. Respondents asserts that the Passat meets Limitations [24c]-[24f] for the same reasons as Limitations [1c]-[1f], with the exception of reliance on mean aluminum composition data gathered through spot EDS analysis. RIB at 85-86; Tr. (Brown) at 845:4-846:22; RDX-0002C.86-90

ArcelorMittal disputes that Respondents met their burden to show anticipation of Limitations [24c]-[24f] by the Passat for same reasons as Limitations [1c]-[1f]. *See* CIB at 75-84; CRB at 32-40.

For all the reasons discussed above with respect to Limitations [1c]-[1f], the undersigned finds that the Respondents have shown, by clear and convincing evidence, that the Passat includes each of the claimed layers of Limitations [24c]-[24f]. Additionally, the undersigned finds that the undisputed evidence of record demonstrates that each of the claimed layers has a respective mean aluminum composition, that each of the first, second, third, and fourth mean aluminum compositions are different from each other, and that the second mean aluminum composition is greater than the third. *See, e.g.*, Tr. (Brown) at 845:4-846:22; RDX-0002C.87-90; RDX-0004C.27.

Accordingly, Respondents have shown that the Passat meets Limitations [24c]-[24f] of the '602 patent.

v. Claim Limitation [24g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that the Passat meets Limitation [24g] for the same reasons as Limitations [1g]. RIB at 85-86; Tr. (Brown) at 845:4-846:22; RDX-0002C.86-90. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitation [1g], the undersigned finds that the Passat meets Limitation [24g]. Accordingly, Respondents have shown that the Passat meets Limitation [24g] of the '602 patent.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 24 of the '602 patent is anticipated by the Passat.

n. Claim 26

Claim 26 depends from claim 24, and requires in addition "wherein the layer (a) has a thickness less than 15 micrometers." '602 patent, cl. 26. ArcelorMittal does not dispute that this

limitation is met by the Passat. *See* CIB at 75-84; CRB at 32-40. As discussed above, Respondents have shown by clear and convincing evidence that claim 24 is anticipated by the Passat, and Respondents have shown that the additional limitation of claim 9—which is identical to the additional limitation of claim 26—is anticipated by the Passat.

Accordingly, Respondents have shown by clear and convincing evidence that claim 26 of the '602 patent is anticipated by the Passat.

5. The '227 Patent

Respondents contend that each and every claim asserted either for infringement and/or the technical prong of the domestic industry requirement is invalid as anticipated by the Passat. For the reasons explained below, Respondents have shown, by clear and convincing evidence, that claims 1-2, 4-7, 9-10, 13, 15-17, and 24, and of the '227 patent are anticipated by the Passat. Respondents have not shown by clear and convincing evidence that claims 8 and 11 of the '227 patent are anticipated by the Passat.

a. Claim 1

i. Claim Limitation [1pre]: A hot stamped coated steel product, which comprises:

The parties appear to agree that the preamble is limiting. *See* CIB at 118; RIB at 122. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that the Passat is a hot stamped coated steel product. *See* Tr. Tr. (Brown) at 835:14-19, 847:7-849:3; RDX-0002C.58, 96-97; RX-0085.6.

Accordingly, Respondents have shown that the Passat meets Limitation [1pre] of the '227 patent by clear and convincing evidence.

ii. Claim Limitation [1a]: (a) a strip of base steel having a first side and a second side; and

Respondents assert that the Passat meets Limitation [1a] of the '227 patent for the same reasons as Limitation [1a] of the '602 patent. RIB at 122; Tr. (Brown) at 847:7-849:3, 835:20-836:2; RDX-0002C.96-97, 59. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 122, 75-84, 120; CRB at 32-40. For the same reasons as discussed above with respect to Limitations [1a] of the '602 patent, the undersigned finds that the Passat meets Limitation [1a] of the '227 patent. Accordingly, Respondents have shown that the Passat meets Limitation [1a] of the '227 patent by clear and convincing evidence.

iii. Claim Limitation [1b]: (b) 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 (i) said coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and (ii) wherein the coating includes, proceeding from the base steel outwards:

Respondents assert that the Passat meets Limitation [1b] of the '227 patent for the same reasons as Limitation [1b] of the '602 patent. *See* RIB at 122; Tr. (Brown) at 847:7-849:3, 836:3-837:2; RDX-0002C.96-97, 60-61. ArcelorMittal does not dispute that this limitation is met by the Passat, other than to assert that Dr. Brown's reliance on EDS analysis conducted on a different SEM image of the BL1 coupon constitutes improper "mixing and matching" in an anticipation analysis. *See* CIB at 75-84, 122; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. Moreover, for the same reasons as discussed above with respect to Limitation [1b] of the '602 patent, the undersigned finds that the Passat

meets Limitation [1b] of the '227 patent. Accordingly, Respondents have shown that the Passat meets Limitation [1b] of the '227 patent by clear and convincing evidence.

iv. Claim Limitations [1c]-[1f]: (a) an Interdiffusion layer, (b) an Intermediate layer, (c) an Intermetallic layer, (d) a Superficial layer, wherein layers (a), (b), (c), and (d) each have a different mean composition from one another

The only difference between Limitations [1c]-[1f] of the '227 patent and Limitations [1c]-[1f] of the '602 patent is that the '227 patent specifies that each of the layers has a different mean composition from each other. *See* Tr. (Brown) at 848:11-24; RDX-0002C.97. Respondents assert that the Passat meets Limitations [1c]-[1f] of the '227 patent for the same reasons as Limitations [1c]-[1f] of the '602 patent, with the exception of reliance on spot EDS data showing different mean compositions for iron and aluminum compositions. RIB at 122-23; Tr. (Brown) at 848:11-24; RDX-0002C.97; RDX-0004C.27 (mean composition data derived from RX-0173).

ArcelorMittal disputes that Respondents met their burden to show anticipation of Limitations [1c]-[1f] of the '227 patent by the Passat for same reasons as Limitations [1c]-[1f] of the '602 patent. *See* CIB at 122, 75-84; CRB at 32-40.

For all the reasons discussed above with respect to Limitations [1c]-[1f] of the '602 patent, the undersigned finds that the Respondents have shown, by clear and convincing evidence, that the Passat includes each of the claimed layers of Limitations [1c]-[1f] of the '227 patent. Additionally, the undersigned finds that the evidence of record demonstrates that each of the claimed layers has a different mean composition from each other. *See, e.g.*, Tr. (Brown) at 847:7-849:3; RDX-0002C.97; RDX-0004C.27 (mean composition data derived from RX-0173).

Accordingly, Respondents have shown that the Passat meets Limitations [1c]-[1f] of the '227 patent.

v. Claim Limitation [1g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that the Passat meets Limitation [1g] of the '227 patent for the same reasons as Limitation [1g] of the '602 patent. *See* RIB at 124; Tr. (Brown) at 847:7-849:3, 838:9-18; RDX-0002C.96, 66. ArcelorMittal does not dispute that this limitation is met by the Passat. *See* CIB at 122, 75-84; CRB at 32-40. For the same reasons as discussed above with respect to Limitations [1g] of the '602 patent, the undersigned finds that the Passat meets Limitation [1g] of the '227 patent. Accordingly, Respondents have shown that the Passat meets Limitation [1g] of the '227 patent.

* * *

Accordingly, ArcelorMittal has shown by clear and convincing evidence that claim 1 of the '227 patent is anticipated by the Passat.

b. Claim 2

Claim 2 depends from claim 1, and requires in addition "wherein said layer (a) has a thickness that is less than half of said thickness of the coating." '227 patent, cl. 2. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, layer (a) has a thickness that is less than half of the thickness of the coating. *See* Tr. (Brown) at 849:4-12; RDX-0002C.98; *see also, e.g.*, RX-0086; RDX-0004C.24 (identifying average coating thickness of 37.9 microns and average layer (a) thickness of 9.4 microns).

Accordingly, Respondents have shown by clear and convincing evidence that claim 2 of the '227 patent is anticipated by the Passat.

c. Claim 4

Claim 4 depends from claim 1, and requires in addition "wherein said layer (a) has a thickness of 17 micrometers or less." '227 patent, cl. 4. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, layer (a) has a thickness that is less than 17 micrometers. *See* Tr. (Brown) at 849:13-19; RDX-0002C.99; *see also, e.g.*, RDX-0002C.24 (identifying average thickness of 9.4 microns for layer (a)); RX-0086.

Accordingly, Respondents have shown by clear and convincing evidence that claim 4 of the '227 patent is anticipated by the Passat.

d. Claim 5

Claim 5 depends from claim 1, and requires in addition "wherein said layer (a) has a thickness of 15 micrometers or less." '227 patent, cl. 5. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that in the Passat, layer (a) has a thickness that is less than 15 micrometers. *See* Tr. (Brown) at 849:13-19; RDX-0002C.99; *see also, e.g.*, RDX-0002C.24 (identifying average thickness of 9.4 microns for layer (a)); RX-0086.

Accordingly, Respondents have shown by clear and convincing evidence that claim 5 of the '227 patent is anticipated by the Passat.

e. Claim 7

Claim 7 depends from claim 1, and requires in addition "wherein the interdifffusion layer has a first mean iron composition, the intermediate layer has a second mean iron composition

less than the first mean iron composition; wherein the intermetallic layer has a third mean iron composition, the third mean iron composition less than the first mean iron composition and greater than the second mean iron composition, and the superficial layer has a fourth mean iron composition, the fourth mean iron composition begin [sic] less than the third mean iron composition." '227 patent, cl. 7. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that each of the claimed layers meets the requirements for the relationships of the mean iron compositions identified in the claims. *See* Tr. (Brown) at 849:20-850:11; RDX-0002C.100; *see also, e.g.*, RDX-0004C.27 (excerpting spot EDS data from RX-0173).

Accordingly, Respondents have shown by clear and convincing evidence that claim 7 of the '227 patent is anticipated by the Passat.

f. Claim 8

Claim 8 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (b)." '227 patent, cl. 8. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat based on the test results of the BL1 coupon.

However, as discussed above, *supra*, the undersigned finds that Respondents have not—by clear and convincing evidence—established anticipation of claims 8 and 11 of the '227 patent based on test results from two different coupons (BL1 and BL5) given the evidence taken as a whole. *See supra* Part VIII.B.3; CIB at 81-82.

Accordingly, Respondents have not shown by clear and convincing evidence that claim 8 of the '227 patent is anticipated by the Passat.

g. Claim 9

Claim 9 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (c)." '227 patent, cl. 9. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is greater than the thickness of layer (c). *See* Tr. (Brown) at 850:21-851:10; RDX-0002C.102; *see also, e.g.*, RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 9 of the '227 patent is anticipated by the Passat.

h. Claim 10

Claim 10 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (d)." '227 patent, cl. 10. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is greater than the thickness of layer (d). *See* Tr. (Brown) at 850:21-851:10; RDX-0002C.102; *see also, e.g.*, RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 10 of the '227 patent is anticipated by the Passat.

i. Claim 11

Claim 11 depends from claim 1, and requires in addition "wherein layer (a) has a thickness: that is greater than a thickness of layer (b); that is greater than a thickness of layer (c); and that is greater than a thickness of layer (d)." '227 patent, cl. 11.

As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat based on the test results of the BL1 coupon.

However, as discussed above, *supra*, the undersigned finds that Respondents have not—by clear and convincing evidence—established anticipation of claims 8 and 11 of the '227 patent based on test results from two different coupons (BL1 and BL5) given the evidence taken as a whole. *See supra* Part VIII.B.3; CIB at 81-82.

Accordingly, Respondents have not shown by clear and convincing evidence that claim 11 of the '227 patent is anticipated by the Passat.

j. Claim 13

Claim 13 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is more than twice a thickness of layer (c)." '227 patent, cl. 13.

As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is more than twice the thickness of layer (c). *See* Tr. (Brown) at 850:21-851:10; RDX-0002C.102; *see also, e.g.*, RDX-0004C.24.

Accordingly, Respondents have shown by clear and convincing evidence that claim 13 of the '227 patent is anticipated by the Passat.

k. Claim 15

Claim 15 depends from claim 1, and requires in addition "wherein the hot stamped coated steel product is fully martensitic." '227 patent, cl. 15. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 75-84; CRB at 32-40. In addition, the undisputed evidence demonstrates the hot stamped coated steel product has a fully martensitic—typified by "needle-like features"—structure. *See* Tr. (Brown) at 851:11-5; RDX-0002C.103; RX-0086.

Accordingly, Respondents have shown by clear and convincing evidence that claim 15 of the '227 patent is anticipated by the Passat.

l. Claim 16

Claim 16 depends from claim 1, and requires in addition "wherein the base steel consists of the following components by weight based on total weight: 0.15%<carbon<0.5%; Q.5%<manganese<3%; 0.1 %<silicon<0.5%; 0.01 %<chromium<l %; titanium<0.2%; aluminum<0.1%; phosphorus<0.l %; sulfur<0.05%; 0.0005%<boron<0.08%; a remainder being iron and impurities inherent in processing." '227 patent, cl. 16. Respondents assert that the Passat meets the additional limitation of claim 16 of the '227 patent for the same reasons as claim 3 of the '602 patent. RIB at 130; Tr. (Brown) at 852:6-14; RDX-0002C.104. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84, 122; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law.

See supra Part VIII.B.3. In addition, the undisputed evidence demonstrates the base steel in the Passat has the claimed composition. *See* Tr. (Brown) at 840:8-842:5, 852:6-14; RDX-0002C.104, 69-80; RX-0087.2.

Accordingly, Respondents have shown by clear and convincing evidence that claim 16 of the '227 patent is anticipated by the Passat.

m. Claim 17

Claim 17 depends from claim 1, and requires in addition "wherein the base steel consists of the following components by weight based on total weight: wherein the base .steel consists of the following components by weight based on total weight: 0.l5%<carbon<0.25%, 0.8%<manganese<l .8%, 0.10%<silicon<0.35%, 0.01 %<chromium<0.5%, titanium<0.l %, aluminum<0.l %, phosphorus<0.l %, sulfur<0.05%, 0.002%<boron<0.005%, a remainder being iron and impurities inherent in processing." '227 patent, cl. 17. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform base steel composition testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84, 122; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. In addition, the undisputed evidence demonstrates the base steel in the Passat has the claimed composition. *See* Tr. (Brown) at 840:8-842:5, 852:15-234; RDX-0002C.105, 69-80; RX-0087.2.

Accordingly, Respondents have shown by clear and convincing evidence that claim 17 of the '227 patent is anticipated by the Passat.

n. Claim 24

Claim 24 depends from claim 1, and requires in addition "wherein the hot stamped coated steel product has a mechanical strength in excess of 1000 MPa." '227 patent, cl. 24. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by the Passat. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue that the use of a different coupon to perform mechanical strength testing amounts to improper "mixing and matching." *See* CIB at 80, 75-84, 122; CRB at 32-40. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the symmetrical analysis and testing methodology employed for purposes of the infringement analysis and unsupported by case law. *See supra* Part VIII.B.3. In addition, the undisputed evidence demonstrates the Passat has the claimed mechanical strength. *See* Tr. (Brown) at 852:24-853:7; RDX-0002C.106; Tr. (Bradley) at 757:19-758:2; RX-0095.63; RX-0087.1.

Accordingly, Respondents have shown by clear and convincing evidence that claim 24 of the '227 patent is anticipated by the Passat.

C. Anticipation by Lachmann

Respondents contend that "Lachmann" (RX-0062), which is a presentation by Volkswagen's Dr. Carsten Lachmann, anticipates claims 1-4, 20-22, and 24 of the '602 patent and claims 1, 2, 7-11, 13, 15, and 24 of the '227 patent.[98] RIB at 86, 131.

ArcelorMittal raises four challenges: (1) whether Respondents have shown by clear and convincing evidence that Lachmann was publicly available prior to the relevant priority date;

[98] Respondents also contend that to the extent any of the limitations are not disclosed by Lachmann, they would be obvious in view of the knowledge of one of skill in the art. *See* RIB at 95-96. Because the undersigned finds the claim limitations anticipated, the single-reference obviousness theory need not be reached.

(2) whether Lachmann is enabled; (3) whether Respondents have shown by clear and convincing evidence that the thickness limitations in the independent claims are satisfied; and (4) whether Respondents have shown that dependent claims 3 and 4 of the '602 patent and claims 16 and 17 of the '227 patent are anticipated. CIB at 84-94. The first two arguments cut across all claims of the Asserted Patents and are addressed, in turn, before considering the claim-by-claim analysis of invalidity.

For the reasons discussed below, the undersigned finds that Respondents have shown, by clear and convincing evidence, that Lachmann anticipates claims 1-4, 20-22, and 24 of the '602 patent and anticipates claims 1, 2, 7-11, 13, 15, and 24 of the '227 patent.

1. Prior Art Status of Lachmann

Respondents contend that Lachmann is prior art that was publicly available as of January 18, 2005, based on the date of the reference, an invitation to the lecture at which the Lachmann slides were presented, and an affidavit from an individual, Matthias Graul ("Graul Affidavit"). *See* RRB at 50-51. The slides, invitation, and affidavit are all part of the prosecution history of the Asserted Patents. RX-0062.1-3 (Lachmann English Trans.).

ArcelorMittal argues that Respondents have not established that Lachmann was publicly available as of January 18, 2005. ArcelorMittal argues that the Graul affidavit was executed on September 24, 2014, 10 years after the Lachmann presentation, and that Respondents did not take discovery of Mr. Graul or discovery relevant to the alleged public accessibility of Lachmann. CIB at 85; CRB at 41. ArcelorMittal also argues that there is a date indicating "10.07.2014" on some of the Lachmann slides, which "cast[s] doubt on the public availability of Lachmann in 2005." CIB at 85; CRB at 41.

In response, Respondents argue that there is no evidence that Mr. Graul's affidavit is inaccurate, and that the invitation to the presentation, in combination with Mr. Graul's affidavit stating his attendance, constitutes clear and convincing evidence of public accessibility.

Upon review of the evidence of record and the submissions of the parties, the undersigned finds that Respondents have established that Lachmann was publicly available as of January 18, 2005.

The face of Lachmann is dated as "18.01.2005," *see* RX-0062.3, which is consistent with an invitation advertising the lecture to be given on "Tuesday, 18.01.2005," and the invitation, which is itself dated "05.01.2005." *See* RX-0062.1. The date is also consistent with a later affidavit executed by Matthias Graul, who swore "under oath and penalty of perjury" in connection with a proceeding before the European Patent Office that he attended the lecture on January 18, 2005. RX-0062.2. The Lachmann reference—including the lecture slides, the Graul affidavit, and the invitation—are internally consistent and were provided by ArcelorMittal[99] to the PTO during prosecution and admitted as joint exhibits in this investigation without objection. *See* JX-0003.1348, .1350 (June 4, 2019 IDS identifying Lachmann)[100]; JX-0003.1525-1778

[99] *See* JX-0003.2, .9 (identifying ArcelorMittal as applicant in May 16, 2019 application that issued as the '602 patent).

[100] The IDS indicates a date of "Jan. 18, 2008"; the "2008" is clearly a typographical error in view of the corresponding documents in the file history showing a January 18, 2005 date.

(copies of invitation, Graul affidavit, and lecture slides).[101] ArcelorMittal has not persuasively argued why this evidence should be disregarded.[102]

ArcelorMittal contends that Respondents failed to show that Lachmann was "disseminated or otherwise made accessible to" those skilled in the art, *see* CRB at 41, but the only specific argument ArcelorMittal makes is that based on the Graul affidavit—which identifies Mr. Graul as working on "joining technologies for high-strength steel"—Mr. Graul may not meet the definition of one of skill in the art. CIB at 86. The undersigned finds this argument unpersuasive. Mr. Graul's affidavit indicated that he worked at Volkswagen AG in development since 2000 and was responsible for "joining technologies of high-strength steels," which is consistent with ArcelorMittal's definition of one of ordinary skill in the art as having "at least two years of experience working on the development of steels." *See* CIB at 30; Tr. (Fekete) at 508:13-22. The undersigned is unpersuaded that this is distinct from the skilled artisan definition advanced by ArcelorMittal, including because ArcelorMittal employees testified that research into joining technologies were part of the work done in support of the DI Precursor Products. *See* Tr. (Atkinson) at 241:11-25 (describing the development of "coil joining" for

[101] The prosecution history for the '602 patent appears to contain several duplicates of the Lachmann slides, Graul affidavit, and invitation to the Lachmann lecture, which appears to be a consequence of the way Lachmann was identified to the PTO (as a non-patent literature document, *see* IDS at JX-0003.1348) and cited (and thus appended) to European Patent Office Proceedings that were also identified in an IDS and produced to the PTO by ArcelorMittal. *See* IDS at JX-0003.1347, 3629. No party has identified any inconsistencies between the various versions of Lachmann in the prosecution history and the Lachmann reference as submitted into evidence at the hearing.

[102] ArcelorMittal refers to some slides containing a notation of a file name, "DVS-Vortrag 2005_CL 1.ppt" and a date of "10.07.2014." The undersigned credits the explanation provided by the Opposition Division at the European Patent Office that the "10.07.2014" date was added on the slides upon printing the file in conjunction with a different European opposition proceeding, and does not defeat the prior art status of Lachmann. *See* JX-0003.3486-87. As to the arguments about the reliability of Mr. Graul's later affidavit, the affidavit was executed under penalty of perjury and provided by ArcelorMittal to the PTO. In addition, Mr. Graul's sworn assertion that he attended the presentation appears to be consistent with the appearance of his name later in the Lachmann reference, as part of an (untranslated) list of what appears to be a list of attendees. RX-0062.249; RX-0005.249-50 (higher quality scan of Lachmann).

USIBOR 2000 at ArcelorMittal). Moreover, the evidence indicates that Lachmann was presented without an expectation of confidentiality, advertised to "a large number of participants," and presented to an audience of those interested in high-strength sheet steel qualities in automotive construction, including those with skill in the art. *See* RX-0005.1, 2, 249-50; *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1381 (Fed. Cir. 2018). *See also In re Klopfenstein*, 380 F.3d 1345, 1351 (Fed. Cir. 2004) ("[A] reference, 'however ephemeral its existence,' may be a 'printed publication' if it 'goes direct to those whose interests make them likely to observe and remember whatever it may contain that is new and useful.'"). It is also undisputed that (1) USIBOR 1500; and (2) hot-stamping of USIBOR 1500 was generally known before the asserted invention. Tr. (Brown) at 813:11-21; Tr. (Drillet) at 151:4-12; RRB at 53. Of the six slides highlighted in Lachmann, a single slide (RX-0062.7) is relied upon for the asserted novel four-layer structure of the Asserted Patents. *See, e.g.*, *Klopfenstein*, 380 F.3d at 1351–52 ("[M]ost of the eight substantive slides only recited what had already been known in the field, and only a few slides presented would have needed to have been copied by an observer to capture the novel information presented by the slides."); RDX-0002C.117-18 (annotating RX-0062.7). Taken together, the totality of the evidence demonstrates that Lachmann was sufficiently publicly accessible to qualify as a "printed publication" for the purposes of 35 U.S.C. § 102(b). *Klopfenstein*, 380 F.3d at 1352; *Mass. Inst. of Tech. v. AB Fortia*, 774 F.2d 1104, 1108 (Fed. Cir. 1985) (finding oral presentation of paper to between 50 to 500 members of the interested public at conference and distribution of paper to "as many as six persons" without restriction rendered paper a "printed publication").

Accordingly, the undersigned finds that Respondents have established that Lachmann was publicly available as of January 18, 2005.

2. Enablement

ArcelorMittal argues that Lachmann is not enabled, and that "VinFast and Dr. Brown cannot avoid their burden to show enablement—by clear and convincing evidence" including because the entirety of the Lachmann slides were not translated or relied upon and that it is unclear that the Lachmann images are actual hot-stamped parts or "simulated parts, graphical descriptions, aspirational images, or hypothetical images." CIB at 88. Relying on Dr. Raabe, ArcelorMittal argues that the process parameters required to achieve the claimed four-layer structure are not disclosed in Lachmann, other than the heating rate, which ArcelorMittal states is "insufficient to achieve the claimed invention." CIB at 90.

Respondents, in opposition, argue that Lachmann is enabled, and that ArcelorMittal's arguments regarding process parameters "is nothing more than an attempt at creating additional claim requirements on validity that do not exist for purposes of infringement." RRB at 51. Respondents point to the "numerous" contemporaneous disclosures of hot-stamping parameters for USIBOR, coupled with SEM micrographs showing the resulting microstructure. RRB at 51-52 (citing RX-0019 (Cornette); RX-0049 (Kefferstein); RX-0081 (Vassiere); RX-0022 (Suehiro II); RX-0063 (Engels); RX-0013 (Hein); RDX-0002C.41). Respondents argue that many of the process parameters identified as "missing" from Lachmann are irrelevant to the formation of the claimed four-layer structure, or redundant because Lachmann discloses the use of pre-coated USIBOR. RRB at 56.

ArcelorMittal argues—in reply and in a later-filed motion to strike—that Respondents "never articulated or provided notice of any enablement theory for Lachmann" and any attempt to do so should be stricken. CRB at 41; Mot. Dkt. No. 1402-023. ArcelorMittal also argues that Respondents' arguments as to why one of skill in the art would be motivated to combine

Cornette and Lachmann—that a "POSITA would have recognized that these specific numerical values [provided by Cornette] would be useful for experimenting," RIB at 97—"all but concedes Lachmann's disclosure is not enabling." CRB at 42-43.

Before turning to the substance of the dispute, the undersigned notes that ArcelorMittal misstates the burden associated with enablement. As the Federal Circuit recently, and unambiguously reaffirmed, "prior art disclosures are presumed enabling." *Agilent Techs., Inc. v. Synthego Corp.*, 139 F.4th 1319, 1327 (Fed. Cir. 2025); *In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012) (extending the presumption to printed publications). Thus, it is ***ArcelorMittal*** who bears the burden to come forward with "persuasive evidence showing that the prior art [reference] does not enable the claimed invention." *Impax Lab'ys, Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1316 (Fed. Cir. 2008); *see also id.* ("the district court correctly placed the burden of proving non-enablement on the patentee"); *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443, 450 (Fed. Cir. 2021) ("[R]egardless of the forum, prior art patents and publications enjoy a presumption of enablement, and the patentee/applicant has the burden to prove nonenablement for such prior art."). Moreover, hypothetical or prophetic examples may be an enabling disclosure. *Agilent Techs.*, 139 F.4th at 1327 (affirming Board's finding of enablement of prior art reference based, in part, on prophetic, non-working examples and noting "[a] finding of anticipation 'does not require the actual creation or reduction to practice of the prior art subject matter; anticipation requires only an enabling disclosure.'") (citation omitted); *contra* CIB at 88 (arguing that Dr. Brown failed to identify whether the examples in Lachmann are "actual parts" or "simulated parts, graphical descriptions, aspirational images, or hypothetical images").

Under the proper legal framework, and upon review of the submissions and arguments of the parties, the undersigned finds that ArcelorMittal has not come forward with "persuasive evidence" sufficient to defeat the presumption of enablement afforded to Lachmann.[103]

ArcelorMittal argues that because Lachmann does not specify the processing parameters identified in the Asserted Patents,[104] one of skill in the art could not make the claimed invention without undue experimentation. CIB at 89. The *Wands* factors typically guide the evaluation of whether undue experimentation is required, including: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). ArcelorMittal argues that Lachmann identifies only the heating temperature of the oven, and that the parameters impacting

[103] The undersigned also DENIES ArcelorMittal's motion to strike as to alleged new Lachmann enablement theories. (Mot. Dkt. No. 1402-023). (The other portions of the Motion to Strike are discussed in connection with the issues to which they pertain. *See* Parts VIII.B.2, VIII.C.3). First, because Lachmann is presumed enabled, it was not improper for Respondents to decline to affirmatively identify "an enablement theory." *See* Reply, EDIS Doc. ID 850198. Second, the undersigned is persuaded that Respondents' arguments in the post-hearing reply brief regarding the process parameters known in the art and whether one of ordinary skill in the art could obtain the claimed four-layer structure using the process parameters known in the art was a primary theme throughout the hearing and the parties' briefing and the subject of extensive testimony by both sides' experts. *See, e.g.*, Tr. (Fekete) at 694:5-8, 624:11-625:1; Tr. (Brown) at 907:4-23; Tr. (Raabe) at 1077:7-1078:7, 1172:24-1179:14.

[104] The failure to specify each of the same processing parameters as in the Asserted Patents, CIB at 89, does not establish a lack of enablement of Lachmann, as "[t]he standard for what constitutes proper enablement of a prior art reference for purposes of anticipation under section 102, however, differs from the enablement standard under section 112." *See Verizon Servs. Corp. v. Cox Fibernet Virginia, Inc.*, 602 F.3d 1325, 1337 (Fed. Cir. 2010) (quoting *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1325 (Fed. Cir. 2005)). Similarly, the trial and error of the inventors in reducing the full scope of the invention to practice is not relevant, as Dr. Drillet testified they needed to find "the lower limit, the upper limit, the main range and so on" for the process parameter windows, while enablement in the section 102 context "need not enable the [challenged] claim in its entirety, but instead the reference need only enable a single embodiment of the claim." *See Agilent*, 139 F.4th at 1327 (quoting *In re Morsa*, 803 F.3d 1374, 1377 (Fed. Cir. 2015)).

the formation of the claimed four-layer structure include "steel thickness, pre-coating thickness and homogeneity, oven type, heating rate, and cooling rate." CIB at 89. Other evidence in the record, however, establishes that as of the date of the Lachmann presentation in 2005, hot-stamping of pre-coated USIBOR 1500—the precursor material identified in Lachmann, *see* Tr. (Brown) at 882:18-4—was well-established in the art. *See, e.g.*, Tr. (Drillet) at 151:4-15 ("[Q]: Fair to say, Usibor was on sale between 2001 and 2006; correct? [A]: Yes. [Q]: When Usibor was sold, it was sold to hot-stampers; correct? [A]: Of course."); Tr. (Fekete) ("[A]: In fact, you heard Dr. Drillet testify that Usibor has been around since 2001; isn't that right? [A]: Yes. [Q]: It's been hot-stamped since then; isn't that right? [A]: Yes."); Tr. (Raabe) at 1087:15-24 (agreeing that USIBOR was hot-stamped for platform parts as of 2005); *see also* Tr. (Brown) at 825:21-832:13 (discussing references disclosing various hot-stamping parameters for USIBOR 1500). Although Dr. Raabe testified that given the parameters specified in Lachmann (e.g., the furnace temperature and the precursor product), one of skill could not reproduce the claims, Dr. Raabe did not specifically or persuasively opine on the amount of experimentation required. *See* Tr. (Raabe) at 1058:11-1061:23. Moreover, although it is clear that many processing parameters impact the microstructure of the product that is ultimately formed, the Asserted Patents and evidence introduced at the hearing identify temperature, dwell time, and/or the heating rate as the primary parameters.[105] *See* '602 patent, Fig. 7; Tr. (Brown) at 909:1-9 ("Temperature, heating rate, dwell time. These all play into producing the product."); Tr. (Drillet) ("As I described, we have different kinds of parameters, but the key parameter is the heating rate, yes."). Lachmann

[105] For example, Dr. Fekete testified that in the context of technical domestic industry, that for a given thickness of steel, the "temperature the furnace was set to" and the "process time" for an alleged DI Direct Product were sufficient parameters to know whether the claimed four-layer structure would be created. *See* Tr. (Fekete) at 693:13-694:9 (testifying about CDX-0003C.183-84).

identifies the temperature of the furnace, and there is significant evidence in the record regarding appropriate processing times for the hot-stamping of USIBOR 1500 at that temperature. *See, e.g.*, RX-0019 (disclosing a temperature of 880 to 950°C and process time of 5-10 minutes for USIBOR 1500); RX-0022.2 (disclosing a temperature of 950°C, heating rate, and processing time of 3 minutes (180 seconds) for USIBOR 1500).

Accordingly, in view of the record as a whole, ArcelorMittal has not persuasively overcome the presumption that Lachmann is enabled.

3. The '602 Patent

Respondents contend that claims 1-4, 20-22, and 24 of the '602 patent are invalid as anticipated by Lachmann.

a. Claim 1

i. Claim Limitation [1pre]: A precoated steel product comprising:

The parties appear to agree that the preamble is limiting. *See* CIB at 37; RIB at 74. ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that Lachmann discloses a precoated steel product. *See* Tr. (Brown) at 878:18-25; RDX-0002C.114; RX-0062.4 (disclosing "AlSi-coated 'USIBOR'").

Accordingly, Respondents have shown that Lachmann meets Limitation [1pre] of the '602 patent by clear and convincing evidence.

ii. Claim Limitation [1a]: a strip of base steel having a first side and a second side; and

ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that Lachmann includes a strip

of base steel with a first and second side. *See* Tr. (Brown) at 879:1-8; RDX-0002C.115; RX-0062.4 (disclosing "AlSi-coated 'USIBOR'").

Accordingly, Respondents have shown that Lachmann meets Limitation [1a] of the '602 patent by clear and convincing evidence.

iii. Claim Limitation [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:

ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 84-94; CRB at 40-45. In addition, the evidence demonstrates that Lachmann includes a coating, and that the coating results from interdiffusion between the base steel and an aluminum or aluminum alloy pre-coating. *See* Tr. (Brown) at 879:9-880:7 (describing the line scan at RX-0062.7 as "a canonical example of diffusion"); RDX-0002C.116-17; RX-0062.7.

Accordingly, Respondents have shown that Lachmann meets Limitation [1b] of the '602 patent by clear and convincing evidence.

iv. Claim Limitations [1c]-[1f]: (a) an interdiffusion layer having a first mean iron composition, (b) an intermediate layer having a second mean iron composition different from the first mean iron composition, (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 (d) a superficial layer having a fourth mean iron composition different from the third mean iron composition,

ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 84-94; CRB at 40-45. In addition, the evidence demonstrates that Lachmann includes the claimed four-

layer structure, and that each of the four layers has a different mean iron composition. *See* Tr. (Brown) at 880:8-881:17; RDX-0002C.116-18; RX-0062.7.

Accordingly, Respondents have shown that Lachmann meets Limitations [1c]-[1f] of the '602 patent by clear and convincing evidence.

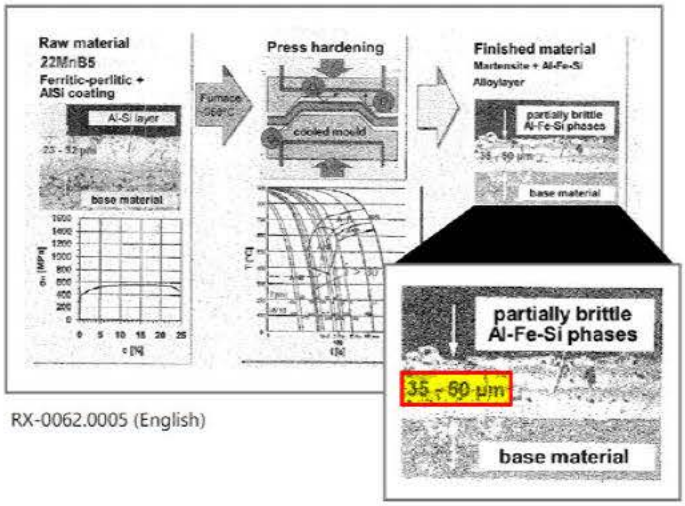
v. Claim Limitation [1g]: wherein the coating has a thickness greater than 30 micrometers.

ArcelorMittal disputes that Respondents have shown that Lachmann meets Limitation [1g], because Dr. Brown's testimony relies on a different SEM image for Limitation [1g] (located at RX-0062.5-6) than for other limitations, which ArcelorMittal contends represents inappropriate "mixing and matching" of embodiments in an anticipation analysis. CIB at 90-91; CRB at 44.

Respondents, in their reply post-hearing brief, argue that the two SEM images relied upon are not from different embodiments, but are "the same material, created using the same process." RRB at 58 (citing RX-0062.5-6). Respondents also argue that the line scan from the SEM relied upon to show the layers (RX-0062.7) identifies a coating thickness of 40 micrometers, which is consistent with the coating thickness of 35-50 micrometers identified in the thickness SEM (at RX-0062.6).[106]

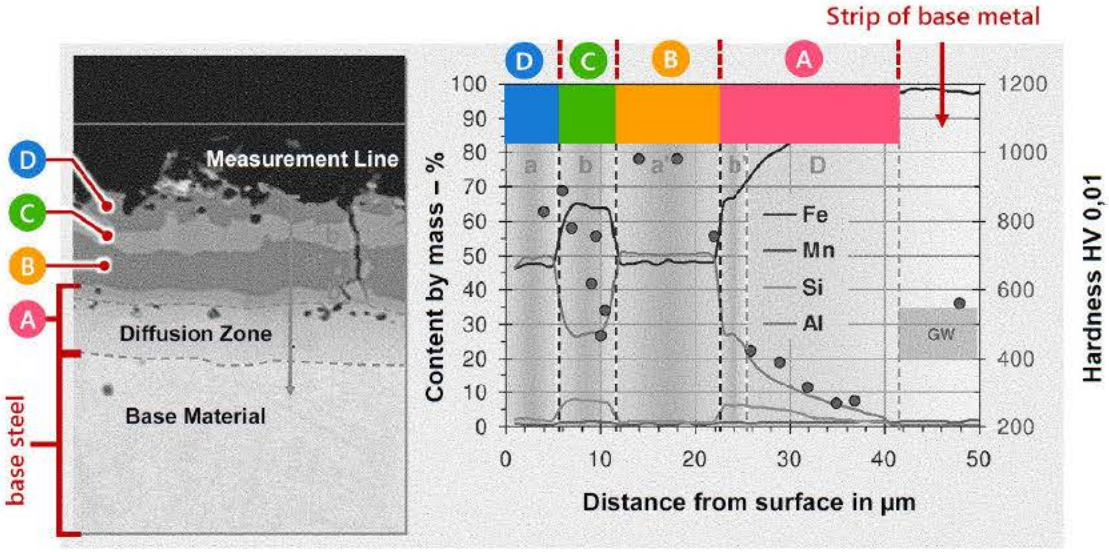
[106] ArcelorMittal later filed a Motion to Strike (Mot. Dkt. No. 1402-023) seeking to strike any reliance on the line scan thickness (at RX-0062.7) for purposes of Limitation [1g], arguing that Respondents withdrew a slide from Dr. Brown's demonstratives relying on RX-0062.7 for Limitation [1g] after ArcelorMittal objected to the slide as beyond the scope of Dr. Brown's expert report, and that Dr. Brown did not testify regarding RX-0062.7 as to Limitation [1g]. Mot. at 9. Respondents, in opposition, argued that the RX-0062.7 line scan figure was relied upon for thickness limitations other than Limitation [1g], extensively relied upon by Dr. Brown at the hearing, and cited to RX-0062.7 in its reply briefing as "additional support" for Limitation [1g]. Resps. Opp., EDIS Doc. ID. 849861 at 8-11. The undersigned hereby DENIES the Motion with respect to Limitation [1g]. (The other portions of the Motion to Strike are discussed in connection with the issues to which they pertain. *See* Parts VIII.B.2, VIII.C.2) RX-0062.7 was admitted into evidence without objection and relied upon by Dr. Brown for other thickness

The citation to RX-0062.5-6 does not constitute improper "mixing and matching." As discussed above in the context of the Passat, it is not *per se* improper to rely on data from different SEM micrographs of the same material in an anticipation analysis. Here, the slides appear adjacent to each other, and discuss the results of the same process on the same precursor material:



RX-0062.0005 (English)

limitations—albeit, not for Limitation [1g]. *See, e.g.*, Tr. (Brown) at 894:16-895:1, 896:13-18, 896:19-897:1; RDX-0002C.157. Respondents' citation to RX-0062.7 with respect to thickness of the overall coating in reply post-hearing briefing was in connection with its argument that the SEM image at RX-0062.5-6 and at RX-0062.7 were from the same embodiment because the coating thicknesses were consistent. This is permissible reply argument.



RDX-0002C.117, 119 (excerpting and annotating RX-0062.5[107], 7). Moreover, the two images are consistent in their disclosure of the overall coating thickness: the coating thickness in RX-0062.5 discloses a coating thickness of 35-50 micrometers, while the thickness in RX-0062.7 is disclosed as approximately 40 micrometers. There is no evidence—including no contrary testimony from Dr. Raabe—that the overall coating thickness in Lachmann varies between the two different SEM micrographs, or that the reference to a coating of 35 to 50 micrometers at RX-0062.5 applies to an embodiment that is different than the SEM micrograph at RX-0062.7. Moreover, on infringement and technical domestic industry, Dr. Fekete's thickness measurements are derived from multiple SEM micrographs, calculated as an average of 5 measurements from 5 different SEM micrographs, indicating that it can be proper to consider multiple SEM micrographs of the same material together. *See, e.g.*, RRB at 28-31 (citing CX-0846C.1, .39, .42, .45, .48, .51; CX-0094C).

[107] The right portion of slide 5—including the SEM and disputed measurement—is replicated at RX-0062.6.

Respondents have therefore shown that Lachmann includes a coating, and that the coating has a thickness of greater than 30 micrometers. *See* Tr. (Brown) at 881:18-24; RDX-0002C.119; RX-0062.5, 7.

Accordingly, Respondents have shown that Lachmann meets Limitation [1g] of the '602 patent by clear and convincing evidence.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 1 of the '602 patent is anticipated by Lachmann.

b. Claim 2

Claim 2 depends from claim 1, and requires in addition "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." '602 patent, cl. 2. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that Lachmann includes a "quasi continuous" layer (c) and (d). *See* Tr. (Brown) at 882:4-17; RDX-0002C.122; RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 2 of the '602 patent is anticipated by Lachmann.

c. Claim 3

Claim 3 depends from claim 1, and requires in addition "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." '602 patent, cl. 3. Respondents argue that Lachmann discloses the use of USIBOR 1500, which, based on a 2021 specification, includes the claimed base steel weight composition. RIB at 92; RRB at 60-62.

ArcelorMittal disputes that this added limitation is met by Lachmann. ArcelorMittal argues that Lachmann does not expressly recite the components of the base steel, and that a specification for USIBOR 1500 dated January 2021 does not show the composition of the base steel as of 2005, and cannot be evidence of inherent anticipation. CIB at 93. ArcelorMittal did not present expert testimony—or any fact witness testimony on changes to the composition of USIBOR 1500—as to this limitation.

In response, Respondents argue there is no evidence that present-day USIBOR 1500 composition has changed, including from ArcelorMittal, the maker of USIBOR 1500. Respondents identify testimony from Tier 1 manufacturers that USIBOR 1500 has always been "the same product" and evidence of "minimal" composition changes in between 2021, 2004, and 2002. RRB at 61 (comparing CX-0669C (USIBOR 1500 as of January 2021), RX-0044.20 (USIBOR 1500 as of 2004), and RX-0081 (USIBOR 1500 as of 2002)); *see also* RX-1277C ([redacted] (Magna) Dep. Tr.) at 181:16-22l; Tr. (Brown) at 883:5-25.

ArcelorMittal, in turn, argues that RX-0044, a thesis from 2004, cannot be evidence of the composition of USIBOR 1500 because there is no evidence that it was publicly accessible, and that RX-0081 similarly cannot be evidence of the composition of USIBOR 1500 because there is no evidence of public accessibility. CIB at 93-94.

Upon review of the arguments of the parties and the evidence of record, the undersigned finds that Respondents have established that Lachmann—through its disclosure of the use of USIBOR 1500—inherently discloses the base steel composition limitations.

First, that Lachmann's reference to "Usibor" is USIBOR 1500 does not appear to be in dispute. *See* CIB at 93 (disputing use of USIBOR specification from 2021 based on date alone). Dr. Brown's testimony that the reference to "Usibor" is USIBOR 1500 is also supported by other evidence in the record, including evidence that Volkswagen—for whom Dr. Lachmann worked—was hot-stamping USIBOR 1500. *See, e.g.*, CX-0563C.4 (timeline of hot-stamping indicating USIBOR 1500 as only ArcelorMittal product hot-stamped between 2001 and 2013), .15 ("2001: Usibor® 1500 historical first coated steel for hot stamping on the auto market," and indicating that other grades of USIBOR were not available until 2017); Tr. (Raabe) at 1089:9-14.

The evidence as to the composition of USIBOR 1500 indicates that the composition has not—in any material way to the claim—changed between 2004 and 2021. ArcelorMittal's arguments that the references that show the consistency—such as Vassiere (RX-0081) or the Aranda thesis (RX-0044)—have not been shown to be publicly accessible are not relevant to the analysis. Recognition of an inherent limitation by a person of ordinary skill in the art before the critical date is not required to establish inherency. *Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) ("this court rejects the contention that inherent anticipation requires recognition in the prior art"). That is, so long as USIBOR 1500 in 2005 necessarily had the claimed compositional ranges, it does not matter whether one of skill in the art would recognize or know that USIBOR 1500 had those characteristics. Here, the evidence shows that as of 2004, USIBOR 1500 met all of the claimed compositional ranges. *See* RRB at 60 (citing RX-0044.20). This is consistent with the Vassiere reference which shows that as of 2002, two years prior, USIBOR 1500 met at least all the claimed compositional ranges except phosphorus (for which no compositional range was provided). *See* RRB at 61 (citing RX-0081.4). Further, the evidence shows that as of 2021, USIBOR 1500 met all the claimed compositional ranges. *See* RRB at 61

(citing CX-0669C.2). In view of the evidence as to the consistency of the inherent characteristics of USIBOR 1500 both before and after the critical date, and the lack of persuasive evidence to the contrary, the undersigned finds that Respondents have established that the disclosure of USIBOR 1500 in Lachmann inherently discloses the claimed compositional weight ranges.[108] *See* Tr. (Brown) at 883:5-885:7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 3 of the '602 patent is anticipated by Lachmann.

d. Claim 4

Claim 4 depends from claim 1, and requires in addition "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." '602 patent, cl. 4. ArcelorMittal does not separately dispute that this added limitation is met, other than to argue, as it did above, that Lachmann did not anticipate because it did not disclose the composition of the USIBOR 1500 base steel. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the evidence in the record that USIBOR 1500 had a consistent composition which met the claimed compositional ranges between at least 2004 and 2021. *See*

[108] The undersigned also notes that Dr. Drillet testified that the development work on the Asserted Patents was done with USIBOR 1500, including the Magna part that was imaged as Figure 1 of the Asserted Patents in 2005 and was identified as having an underlying steel composition of ".23% carbon, 1.25% manganese, 0.017% phosphorus, 0.002% sulfur, 0.27% silicon, 0.062% aluminum, 0.021% copper, 0.019% nickel, 0.208% chromium, 0.005% nitrogen, 0.028% titanium, 0.004% boron, 0.003% calcium." *See* '602 patent, 11:48-52 (identifying composition of base steel for Example 1), 12:32-43 (identifying Figure 1 embodiment as comprised of base steel with "same composition" as Example 1); Tr. (Drillet) at 162:7-10; CDX-0005C.35; CIB at 60 (Magna part made from USIBOR); Tr. (Drillet) at 102:6-13 (identifying the Asserted Patents as "[t]he two patents we have filed on Usibor"). This is further evidence that USIBOR 1500 in 2005 necessarily met the claimed compositions as an inherent characteristic.

supra Part VIII.C.3.c. In addition, the evidence demonstrates that the base steel in Lachmann includes the recited components by weight percentages. *See* Tr. (Brown) at 885:8-15; RDX-0002C.135; RX-0044.20; RX-0081.4; '602 patent, 11:48-52, 12:32-43 (identifying composition of example depicted at Figure 1); Tr. (Drillet) at 162:7-10 (testifying that Magna hot-stamped USIBOR 1500 in TAV report product imaged as Figure 1 in 2005); Tr. (Fekete) at 625:22-23, 627:1-5 (agreeing that Figure 1 of the patent came from the "Magna-related TAV report").

Accordingly, Respondents have shown by clear and convincing evidence that claim 4 of the '602 patent is anticipated by Lachmann.

e. Claim 20

Claim 20 depends from claim 1, and requires in addition "wherein the fourth mean iron composition is lower than the third mean iron composition." '602 patent, cl. 20. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that the fourth mean iron composition in the Lachmann is lower than the third mean iron composition. *See* Tr. (Brown) at 890:12-21; RDX-0002C.142; RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 20 of the '602 patent is anticipated by Lachmann.

f. Claim 21

i. Claim Limitation [21pre]: A precoated steel product comprising:

Respondents assert that Lachmann meets Limitation [21pre] for the same reasons as Limitation [1pre]. RIB at 93; Tr. (Brown) at 890:22-16; RDX-0002C.143. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1pre], the undersigned finds that Lachmann meets

Limitation [21pre]. Accordingly, Respondents have shown that Lachmann meets Limitation [21pre] of the '602 patent.

ii. Claim Limitation [21a]: a strip of base steel having a first side and a second side; and

Respondents assert that Lachmann meets Limitation [21a] for the same reasons as Limitation [1a]. RIB at 93; Tr. (Brown) at 890:22-16; RDX-0002C.143. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1a], the undersigned finds that Lachmann meets Limitation [21a]. Accordingly, Respondents have shown that Lachmann meets Limitation [21a] of the '602 patent.

iii. Claim Limitation [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:

Respondents assert that Lachmann meets Limitation [21b] for the same reasons as Limitation [1b]. RIB at 93; Tr. (Brown) at 890:22-16; RDX-0002C.143. ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1b], the undersigned finds that Lachmann meets Limitation [21b]. Accordingly, Respondents have shown that Lachmann meets Limitation [21b] of the '602 patent.

iv. Claim Limitations [21c]-[21f]: (a) an interdiffusion layer having a first mean iron composition, (b) an intermediate layer having a second mean iron composition different from the first mean iron composition, (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 (d) a superficial layer having a fourth mean iron composition different from the first, second, and third mean iron composition,

Respondents assert that Lachmann meets Limitations [21c]-[21f] for the same reasons as Limitations [1c]-[1f], and because each of layers in Lachmann has a different mean iron composition. RIB at 93; Tr. (Brown) at 890:22-891:12; RDX-0002C.144. ArcelorMittal does not dispute that these limitations are met in Lachmann. *See* CIB at 84-94; CRB at 40-45. For all the reasons discussed above with respect to Limitations [1c]-[1f], the undersigned finds that the Respondents have shown, by clear and convincing evidence, that Lachmann meets Limitations [21c]-[21f].

Accordingly, Respondents have shown that Lachmann meets Limitations [21c]-[21f] of the '602 patent.

v. Claim Limitation [21g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that the Passat meets Limitation [21g] for the same reasons as Limitation [1g]. RIB at 93; Tr. (Brown) at 890:22-16; RDX-0002C.143. ArcelorMittal does not dispute that this limitation is met by Lachmann, other than to assert that Dr. Brown's reliance on RX-0062.5-6 for this limitation constitutes improper "mixing and matching" in an anticipation analysis. *See* CIB at 84-94; CRB at 40-45. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive. *See supra* Part VIII.C.3.a.v. For the same reasons as discussed above with respect to Limitation [1g], the undersigned finds that Lachmann meets

Limitation [21g]. Accordingly, Respondents have shown that Lachmann meets Limitation [21g] of the '602 patent.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 21 of the '602 patent is anticipated by Lachmann.

g. Claim 22

Claim 20 depends from claim 21, and requires in addition "wherein the fourth mean iron composition is lower than the third mean iron composition." '602 patent, cl. 22. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 84-94; CRB at 40-45. As discussed above, Respondents have shown by clear and convincing evidence that claim 21 is anticipated by Lachmann, and Respondents have shown that the additional limitation of claim 20—which is identical to the additional limitation of claim 22—is anticipated by Lachmann.

Accordingly, Respondents have shown by clear and convincing evidence that claim 22 of the '602 patent is anticipated by Lachmann.

h. Claim 24

i. Claim Limitation [24pre]: A precoated steel product comprising:

Respondents assert that Lachmann meets Limitation [24pre] for the same reasons as Limitations [1pre]. RIB at 94; Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitations [1pre], the undersigned finds that Lachmann meets Limitation [24pre]. Accordingly, Respondents have shown that Lachmann meets Limitation [24pre] of the '602 patent.

ii. Claim Limitation [24a]: a strip of base steel having a first side and a second side; and

Respondents assert that Lachmann meets Limitation [24a] for the same reasons as Limitations [1a]. RIB at 94; Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1a], the undersigned finds that Lachmann meets Limitation [24a]. Accordingly, Respondents have shown that Lachmann meets Limitation [24a] of the '602 patent.

iii. Claim Limitation [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 or aluminum alloy pre-coating, and wherein the coating includes, proceeding from the base steel outwards:

Respondents assert that Lachmann meets Limitation [24b] for the same reasons as Limitations [1b]. RIB at 94; Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1b], the undersigned finds that Lachmann meets Limitation [24b]. Accordingly, Respondents have shown that Lachmann meets Limitation [24b] of the '602 patent.

iv. Claim Limitations [24c]-[24f]: (a) an interdiffusion layer having a first mean aluminum composition, (b) an intermediate layer having a second mean aluminum composition different from the first mean aluminum composition, (c) an intermetallic layer having a third mean aluminum composition different from the first and second mean aluminum compositions, the third mean iron composition being higher than the second mean iron composition; and (d) a superficial layer having a fourth mean aluminum composition different from the first, second, and third mean aluminum composition, the second mean aluminum composition being greater than the third mean aluminum composition

The only difference between Limitations [24c]-[24f] and Limitations [1c]-[1f] is the specification of a mean aluminum composition for each of the claimed layers, rather than a mean iron composition. *See* Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. Respondents asserts that Lachmann meets Limitations [24c]-[24f] for the same reasons as Limitations [1c]-[1f], with the exception of reliance on aluminum composition data from the Lachmann line scan. RIB at 94-95; Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. ArcelorMittal does not dispute that these limitations are met in Lachmann. *See* CIB at 122, 84-94; CRB at 40-45.

For all the reasons discussed above with respect to Limitations [1c]-[1f], the undersigned finds that the Respondents have shown, by clear and convincing evidence, that Lachmann includes each of the claimed layers of Limitations [24c]-[24f]. Additionally, the undersigned finds that the undisputed evidence of record demonstrates that each of the claimed layers has a respective mean aluminum composition, that each of the first, second, third, and fourth mean aluminum compositions are different from each other, and that the second mean aluminum composition is greater than the third. *See, e.g.*, Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49.

Accordingly, Respondents have shown that Lachmann meets Limitations [24c]-[24f] of the '602 patent.

v. Claim Limitation [24g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that Lachmann meets Limitation [24g] for the same reasons as Limitations [1g]. RIB at 94; Tr. (Brown) at 891:17-893:1; RDX-0002C.145-49. ArcelorMittal does not dispute that this limitation is met by Lachmann, other than to assert that Dr. Brown's reliance on RX-0062.5-6 for this limitation constitutes improper "mixing and matching" in an anticipation analysis. *See* CIB at 84-94; CRB at 40-45. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive. *See supra* Part VIII.C.3.a.v. For the same reasons as discussed above with respect to Limitations [1g], the undersigned finds that Lachmann meets Limitation [24g]. Accordingly, Respondents have shown that Lachmann meets Limitation [24g] of the '602 patent.

* * *

Accordingly, Respondents have shown by clear and convincing evidence that claim 24 of the '602 patent is anticipated by Lachmann.

4. The '227 Patent

Respondents contend that claims 1, 2, 7-11, 13, 15 and 24 of the '227 patent are invalid as anticipated by Lachmann.

a. Claim 1

i. Claim Limitation [1pre]: A hot stamped coated steel product, which comprises:

The parties appear to agree that the preamble is limiting. *See* CIB at 118; RIB at 131. ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 122, 84-94;

CRB at 40-45. In addition, the undisputed evidence demonstrates that Lachmann is a hot stamped coated steel product. *See* Tr. (Brown) at 894:2-15; RDX-0002C.155.

Accordingly, Respondents have shown that Lachmann meets Limitation [1pre] of the '227 patent by clear and convincing evidence.

ii. Claim Limitation [1a]: (a) a strip of base steel having a first side and a second side; and

Respondents assert that Lachmann meets Limitation [1a] of the '227 patent for the same reasons as Limitation [1a] of the '602 patent. RIB at 132; Tr. (Brown) at 893:11-894:15, 879:1-8; RDX-0002C.155, 115; RX-0062.4. ArcelorMittal does not dispute that this limitation is met by Lachmann. *See* CIB at 122, 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1a] of the '602 patent, the undersigned finds that Lachmann meets Limitation [1a] of the '227 patent. Accordingly, Respondents have shown that Lachmann meets Limitation [1a] of the '227 patent by clear and convincing evidence.

iii. Claim Limitation [1b]: (b) 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 (i) said coating results from interdiffusion between the base steel, and an aluminum or aluminum alloy pre-coating, and (ii) wherein the coating includes, proceeding from the base steel outwards:

Respondents assert that Lachmann meets Limitation [1b] of the '227 patent for the same reasons as Limitation [1b] of the '602 patent. *See* RIB at 132; Tr. (Brown) at 893:11-894:15, 879:9-880:7; RDX-0002C.155, 116-17. ArcelorMittal does not dispute that this limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. For the same reasons as discussed above with respect to Limitation [1b] of the '602 patent, the undersigned finds that Lachmann meets Limitation [1b] of the '227 patent. Accordingly, Respondents have shown that Lachmann meets Limitation [1b] of the '227 patent by clear and convincing evidence.

iv. Claim Limitations [1c]-[1f]: (a) an Interdiffusion layer, (b) an Intermediate layer, (c) an Intermetallic layer, (d) a Superficial layer, wherein layers (a), (b), (c), and (d) each have a different mean composition from one another

The only difference between Limitations [1c]-[1f] of the '227 patent and Limitations [1c]-[1f] of the '602 patent is that the '227 patent specifies that each of the layers has a different mean composition from each other. *See* Tr. (Brown) at 893:11-894:15; RDX-0002C.155-56. Respondents assert that Lachmann meets Limitations [1c]-[1f] of the '227 patent for the same reasons as Limitations [1c]-[1f] of the '602 patent, with the exception of reliance on Lachmann's line scan showing different mean compositions for iron. RIB at 132-33; Tr. (Brown) at 893:11-894:15; RDX-0002C.155-56; RX-0062.7. ArcelorMittal does not dispute that these limitations are met in Lachmann. *See* CIB at 122, 84-94; CRB at 40-45.

For all the reasons discussed above with respect to Limitations [1c]-[1f] of the '602 patent, the undersigned finds that the Respondents have shown, by clear and convincing evidence, that Lachmann includes each of the claimed layers of Limitations [1c]-[1f] of the '227 patent. Additionally, the undersigned finds that the evidence of record demonstrates that each of the claimed layers has a different mean composition from each other. *See, e.g.*, Tr. (Brown) at 893:11-894:15; RDX-0002C.156.

Accordingly, Respondents have shown that Lachmann meets Limitations [1c]-[1f] of the '227 patent.

v. Claim Limitation [1g]: wherein the coating has a thickness greater than 30 micrometers.

Respondents assert that Lachmann meets Limitation [1g] of the '227 patent for the same reasons as Limitation [1g] of the '602 patent. *See* RIB at 133; Tr. (Brown) at 893:11-894:15; RDX-0002C.155-56. ArcelorMittal does not dispute that this limitation is met by Lachmann,

other than to assert that Dr. Brown's reliance on RX-0062.5-6 for this limitation constitutes improper "mixing and matching" in an anticipation analysis. *See* CIB at 122, 84-94; CRB at 40-45. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive. *See supra* Part VIII.C.3.a.v. For the same reasons as discussed above with respect to Limitations [1g] of the '602 patent, the undersigned finds that Lachmann meets Limitation [1g] of the '227 patent. Accordingly, Respondents have shown that Lachmann meets Limitation [1g] of the '227 patent.

* * *

Accordingly, ArcelorMittal has shown by clear and convincing evidence that claim 1 of the '227 patent is anticipated by Lachmann.

b. Claim 2

Claim 2 depends from claim 1, and requires in addition "wherein said layer (a) has a thickness that is less than half of said thickness of the coating." '227 patent, cl. 2. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that in Lachmann, layer (a) has a thickness that is less than half of the thickness of the coating. *See* Tr. (Brown) at 894:16-895:1; RDX-0002C.157; *see also, e.g.*, RX-0062.7 (line scan showing thicknesses of the three layers).

Accordingly, Respondents have shown by clear and convincing evidence that claim 2 of the '227 patent is anticipated by Lachmann.

c. Claim 7

Claim 7 depends from claim 1, and requires in addition "wherein the interdiffusion layer has a first mean iron composition, the intermediate layer has a second mean iron composition less than the first mean iron composition; wherein the intermetallic layer has a third mean iron composition, the third mean iron composition less than the first mean iron composition and greater than the second mean iron composition, and the superficial layer has a fourth mean iron composition, the fourth mean iron composition begin [sic] less than the third mean iron composition." '227 patent, cl. 7. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that each of the claimed layers meets the requirements for the relationships of the mean iron compositions identified in the claims. *See* Tr. (Brown) at 895:13-896:12; RDX-0002C.159; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 7 of the '227 patent is anticipated by Lachmann.

d. Claim 8

Claim 8 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (b)." '227 patent, cl. 8. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that in Lachmann, the layers identified in RX-0062.7 meet the claimed thickness relationship. *See* Tr. (Brown) at 896:13-18; RDX-0002C.160; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 8 of the '227 patent is anticipated by Lachmann.

e. Claim 9

Claim 9 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (c)." '227 patent, cl. 9. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is greater than the thickness of layer (c). *See* Tr. (Brown) at 896:19-13; RDX-0002C.161; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 9 of the '227 patent is anticipated by Lachmann.

f. Claim 10

Claim 10 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is greater than a thickness of layer (d)." '227 patent, cl. 10. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is greater than the thickness of layer (d). *See* Tr. (Brown) at 896:19-13; RDX-002C.161; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 10 of the '227 patent is anticipated by Lachmann.

g. Claim 11

Claim 11 depends from claim 1, and requires in addition "wherein layer (a) has a thickness: that is greater than a thickness of layer (b); that is greater than a thickness of layer (c); and that is greater than a thickness of layer (d)." '227 patent, cl. 11. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is greater than the thickness of layer (b), layer (c), and layer (d). *See* Tr. (Brown) at 896:19-13; RDX-0002C.161; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 11 of the '227 patent is anticipated by Lachmann.

h. Claim 13

Claim 13 depends from claim 1, and requires in addition "wherein layer (a) has a thickness that is more than twice a thickness of layer (c)." '227 patent, cl. 13. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that layer (a) has a thickness that is more than twice the thickness of layer (c). *See* Tr. (Brown) at 896:19-13; RDX-0002C.161; *see also, e.g.*, RX-0062.7.

Accordingly, Respondents have shown by clear and convincing evidence that claim 13 of the '227 patent is anticipated by Lachmann.

i. Claim 15

Claim 15 depends from claim 1, and requires in addition "wherein the hot stamped coated steel product is fully martensitic." '227 patent, cl. 15. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates the hot stamped coated steel product has a fully martensitic structure. *See* Tr. (Brown) at 897:14-9; RDX-0002C.162; RX-0062.6 (identifying finished material as "martensite").

Accordingly, Respondents have shown by clear and convincing evidence that claim 15 of the '227 patent is anticipated by Lachmann.

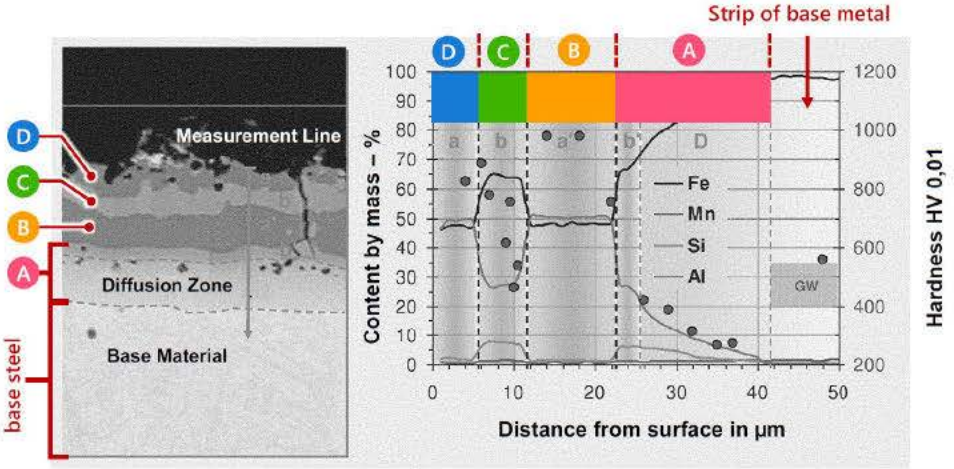
j. Claim 24

Claim 24 depends from claim 1, and requires in addition "wherein the hot stamped coated steel product has a mechanical strength in excess of 1000 MPa." '227 patent, cl. 24. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is anticipated by Lachmann. ArcelorMittal does not separately dispute that this added limitation is met. *See* CIB at 122, 84-94; CRB at 40-45. In addition, the undisputed evidence demonstrates that Lachmann has the claimed mechanical strength. *See* Tr. (Brown) at 899:4-12; RDX-0002C.165; RX-0062.6 (identifying mechanical strength of 1300-1500 megapascals).

Accordingly, Respondents have shown by clear and convincing evidence that claim 24 of the '227 patent is anticipated by Lachmann.

D. Obviousness over Lachmann and Cornette

Respondents contend that Lachmann, in combination with Cornette, renders obvious claims 9, 10, 18, and 26 of the '602 patent and claims 4 and 5 of the '227 patent. These claims each relate to the thickness of the interdiffusion layer—that is, the layer closest to the base steel. Claims 9, 18 and 26 of the '602 patent and claim 5 of the '227 patent require the thickness to be less than 15 micrometers, claim 4 of the '227 patent requires the thickness to be less than 17 micrometers, and claim 10 of the '602 patent requires the thickness to be less than 10 micrometers. The interdiffusion layer in Lachmann (denoted as "A") is greater than 17 micrometers thick:



RDX-0002C.117 (annotating RX-0062.7). To meet the thickness limitations, Respondents rely on Cornette, RX-0019, which discloses an SEM micrograph with a layer (a) with a thickness alleged to be 10.7 micrometers. Tr. (Brown) at 888:6-14. Cornette is a technical paper entitled "High Strength Steels for Automotive Safety Parts" by a team of researchers from Usinor, which is a predecessor company of ArcelorMittal. RX-0019.1. Cornette addresses the applications and

mechanical properties of different grades and types of high strength steels, including coated boron steels such as USIBOR 1500. *See* RX-0019.3, 9-11. According to the document itself, Cornette was presented at the Society of Automotive Engineers annual conference in Detroit, which Cornette identifies as held between March 5-8, 2001. RX-0019.1. It is not disputed that Cornette is prior art under § 102(b). RIB at 40; *see generally* CIB; CRB.

ArcelorMittal disputes (1) whether Respondents sufficiently showed a reason that one of ordinary skill would have sought to combine Cornette and Lachmann as claimed; and (2) whether the combination of Cornette and Lachmann discloses an interdiffusion layer with a thickness of less than 10 micrometers, as required by claim 10 of the '602 patent. *See* CIB at 95-99.

For the reasons discussed below, the undersigned finds that Respondents have not shown, by clear and convincing evidence, that claims 9, 10, 18, and 26 of the '602 patent and claims 4 and 5 of the '227 patent are obvious over the combination of Lachmann and Cornette.

Respondents argue that one of skill in the art would be motivated to apply Cornette's disclosure of various process parameters to Lachmann because Cornette discloses that its process parameters provide corrosion protection and weldability and "excellent mechanical properties," and because Cornette and Lachmann are both directed to hot-stamping of USIBOR 1500. RIB at 97 (citing RX-0019.9-10). Respondents also argue that the overlap in disclosed heating ranges would "reinforce[] the obviousness" of applying Cornette's teachings to Lachmann. RIB at 98. Respondents concede that the proposed modification "would have required experimentation," but argue that the experimentation required was within the bounds of what was routine and achievable for a metallurgist. RIB at 98 (citing Tr. (Brown) at 888:23-889:10, 814:1-14).

ArcelorMittal, however, argues that there is no motivation to combine Cornette and Lachmann. ArcelorMittal argues that "[t]here must be a teaching or suggestion within the prior art or within the general knowledge of a person of ordinary skill in the field of invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor." CIB at 95-96 (quoting *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998)). ArcelorMittal argues that the motivation to combine analysis articulated by Dr. Brown is "quintessential hindsight," CIB at 96, and that Dr. Brown fails to identify which processing conditions in Cornette would impact the thickness of the interdiffusion layer such that it would meet the additional claim limitations, or why someone would want to adjust the thickness of the interdiffusion layer. CIB at 97; CRB at 46 (arguing that the only teaching regarding optimizing layer thickness in Cornette relates to the pre-coating before hot-stamping). ArcelorMittal also contends that the Cornette reference includes a teaching away—"[m]echanical properties after hot forming process are not guaranteed by USINOR"—that was not considered by Dr. Brown in his analysis. CIB at 97; CRB at 46. ArcelorMittal also argues that there is "no evidence that a POSITA would have had a reasonable expectation of success" in achieving the claimed invention, as isolating a single attribute (e.g., interdiffusion layer thickness) is not possible without impacting the "thickness of other layers, the overall coating thickness, and other attributes of various layers, such as their chemical compositions." CIB at 98 (citing Tr. (Raabe) at 1064:15-1065:9); CRB at 47.

Respondents reply that Dr. Brown testified that the thickness of the interdiffusion layer is a function of temperature and residence time in the furnace, and that "it would have been obvious to a POSITA to modify the thickness of the interdiffusion layer to obtain the thickness one desires." RRB at 62-63 (citing Tr. (Brown) at 888:23-889:10).

Upon consideration of the evidence of record and the arguments of the parties, the undersigned finds that Respondents have failed to establish that one of ordinary skill in the art would have sought to combine Lachmann and Cornette to obtain the claimed invention.

Respondents have not provided clear and convincing evidence that one of ordinary skill in the art would have sought to modify Lachmann—or have been successful in the attempt—to achieve an interdiffusion layer with a certain thickness.[109] First, neither Respondents nor Dr. Brown identified a reason for modifying the thickness of the interdiffusion layer; Dr. Brown did not testify as to how a thinner interdiffusion layer or an interdiffusion layer with a defined thickness impacts the properties of the hot-stamped part, or why one of skill would seek to vary those properties. *See* Tr. (Raabe) at 1065:11-22 (explaining that the discussion of thickness in Cornette is not related to the interdiffusion layer); RX-0019.9 (describing the precoating (e.g., prior to hot-stamping) and stating that "the best compromise between corrosion protection and weldability is 25 µm"). Moreover, the evidence demonstrates that a thinner interdiffusion layer is correlated with a thinner intermetallic layer, Tr. (Fekete) at 545:1-7, and Dr. Brown did not persuasively testify that one of ordinary skill would have reason to decrease the thickness of the

[109] ArcelorMittal relies on several pre-*KSR* cases regarding obviousness to argue that "[t]here must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the art" in order to show a motivation to combine. *See* CIB at 95-96 (citing *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998); *Heidelberger Druckmaschinen AG v. Hantscho Com. Prods., Inc.*, 21 F.3d 1068, 1072 (Fed. Cir. 1994)). These cases were superseded by the Supreme Court's decision in *KSR*, which rejected the explicit requirement for a "teaching, suggestion, or motivation," and instead adapted a flexible inquiry, noting that one of skill in the art could find a motivation to combine prior art references in ways other than a teaching, suggestion, or motivation explicit in the reference or the art. *See, e.g.*, *LKQ Corp. v. GM Glob. Tech. Operations LLC*, 102 F.4th 1280, 1292 (Fed. Cir. 2024) ("The Court noted, for example, that design incentives and market forces could be a reason to apply an invention from one field into another, and that a patent claim might be proved obvious with a showing that it would have been 'obvious to try' a 'finite number of identified, predictable solutions' to a problem where there is 'a design need or market pressure to solve.'"); *see also Ex Parte Luke Addati*, No. APPEAL 2021-003393, 2022 WL 2902493, at *11 (P.T.A.B. July 21, 2022) (recognizing abrogation of *ATD Corp. v. Lydall, Inc.*). The undersigned has applied the post-*KSR* framework in evaluating the combination of Lachmann and Cornette.

interdiffusion layer—*e.g.*, to less than 17, 15, or 10 micrometers[110]—given the possible impact to the formation of the other claimed layers and the overall thickness of the coating. *See* Tr. (Fekete) at 545:1-7 (discussing why Ford parts produced by Magna did not practice the claimed patents, [redacted]). This is consistent with testimony from Dr. Raabe about the difficulty of attempting to vary the thickness of a single layer. *See* Tr. (Raabe) at 1064:15-1065:10.

Moreover, Dr. Brown and Respondents acknowledge that the proposed combination of Lachmann and Cornette requires experimentation to achieve the claimed interdiffusion layer thickness. *See, e.g.*, Tr. (Brown) at 888:23-3 ("Cornette provides different processing conditions, and to me, it would have been obvious to someone of ordinary skill to know that here provides a—not a recipe, but conditions by which one could perform experiments to modify the thickness of the interdiffusion layer to be able to obtain whatever thickness one desires."); RIB at 98 ("While this modification would have required experimentation, it would have been well within the bounds of what was routine and achievable for a metallurgist of ordinary skill in the art."). Where a combination requires experimentation, the Federal Circuit has explained that evidence "proffered in support of an 'obvious-to-try' theory[] is insufficient unless it indicates that the possible options skilled artisans would have encountered were 'finite,' 'small,' or 'easily

[110] This is particularly true for claim 10, which requires that the interdiffusion layer be less than 10 micrometers thick. Cornette's interdiffusion layer is identified as 10.7 micrometers thick. *See* RDX-0002C.139 (annotating RX-0019.10). Dr. Brown opined that the experimentation to achieve this thickness would be routine, but there is no persuasive evidence in the record that one of skill in the art would have reason to target a interdiffusion layer that is even thinner than that depicted in the Cornette SEM micrograph, or that experimentation with the process parameters disclosed in Cornette would have been sufficient to achieve an interdiffusion layer with a thickness of less than 10 micrometers. Even today, only four of the DI Direct Products met the additional limitation of claim 10, and claim 10 was not asserted for infringement. *See* Tr. (Fekete) at 592:16-593:18; CDX-0003C.221.

traversed,' and that skilled artisans would have had a reason to select the route that produced the claimed invention." *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.*, 676 F.3d 1063, 1072 (Fed. Cir. 2012); *Adapt Pharma Operations Ltd. v. Teva Pharms. USA, Inc.*, 25 F.4th 1354, 1383 (Fed. Cir. 2022) ("general motivation" to experiment "is not a teaching of the successful invention").[111] Dr. Brown did not identify what dwell times in Cornette, in combination with the temperature ranges disclosed in Lachmann, would be expected to result in thicknesses in the claimed ranges.

The totality of the evidence does not show clearly and convincingly that one of ordinary skill in the art would have had reason to combine Cornette's teachings with Lachmann or a reasonable expectation of success in experimenting with the thickness of the interdiffusion layer of Lachmann in view of Cornette in a way that the result would meet all the limitations of the claims. Because Respondents have not—by clear and convincing evidence—demonstrated that one of ordinary skill would have had a reason to modify the thickness of the interdiffusion layer in Lachmann, or that a skilled artisan would have had a reasonable expectation of success in experiments with the Cornette disclosures to do so, Respondents have failed to show that claims 9, 10, 18, and 26 of the '602 patent and claims 4 and 5 of the '227 patent are obvious over Lachmann and Cornette.[112]

E. Obviousness over Lachmann and Laurent

Respondents contend that Lachmann, in combination with Laurent, renders obvious claims 3, 4, 7 and 8 of the '602 patent and claims 16 and 17 of the '227 patent. RIB at 97-104,

[111] Respondents' generalized arguments about using Cornette appear to assert an obvious-to-try type theory. *See, e.g.*, RIB at 97 ("[a] POSITA would have recognized that these specific numerical values would be useful for experimenting based on Lachmann's disclosure"); RRB at 62 (similar).

[112] Because Respondents failed to establish that one of ordinary skill would have had reason to combine the references, a limitation-by-limitation analysis is not necessary.

142-144. These claims relate to composition of the base steel and specify certain elemental compositions by weight (claims 3 and 4 of the '602 patent and claims 16 and 17 of the '227 patent) and a certain ratio of titanium to nitrogen (claims 7 and 8 of the '602 patent). As discussed above, although Lachmann discloses USIBOR 1500, it does not expressly disclose the characteristics of the base steel. Laurent (RX-0109) is U.S. Patent No. 6,296,805, entitled "Coated Hot- and Cold- Rolled Steel Sheet Comprising a Very High Resistance After Thermal Treatment," which issued on October 2, 2001. RX-0109, Abstract. Laurent discloses a base steel with a certain composition, *id.*, and was repeatedly described as directed to USIBOR steel. *See* Tr. (Drillet) at 149:2-7 ("[Q]: Specifically, you're talking about the '805 patent; is that right? [A]: Yes, it is. This one is the first – it's the patent of 2001, yes. Its about 2001. Yeah. [Q]: This is the original Usibor patent; correct? [A] Yes."); Tr. (Compl. counsel) at 39:5-8 (describing Laurent as "actually a patent that involves aspects of the Usibor steel"); CDX-0005C.6 (identifying Laurent as "Usibor Patent – Starting Point for the Asserted Patents"). It is not disputed that Laurent is prior art under § 102(b). RIB at 52; *see generally* CIB.

ArcelorMittal disputes whether Respondents sufficiently evidenced a reason that one of ordinary skill would have sought to combine Lachmann and the base steel disclosed in Laurent; the disclosure of the claimed base steel compositions in Laurent is not in dispute.

For all the reasons discussed below, the undersigned finds that Respondents have shown, by clear and convincing evidence, that claims 3, 4, 7 and 8 of the '602 patent and claims 16 and 17 of the '227 patent are obvious in view of the combination of Lachmann and Laurent.

1. Reason to Combine Lachmann and Laurent

Respondents argue that one of skill in the art would have reason to substitute the base steel described in Laurent for the base steel (USIBOR 1500) described in Lachmann. RIB at 100;

Part VIII.C.3.c *supra*. Respondents argue that this is no more than substitution of known elements, and that Laurent identifies that the base steel has a "very high mechanical resistance after thermal treatment," providing one of skill in the art with a motivation for the substitution. RIB at 100 (citing RX-0109.2); RRB at 63 (pointing out that Laurent was assigned to the maker of USIBOR, a predecessor company of ArcelorMittal).

ArcelorMittal argues that Lachmann does not identify any deficiencies in its base steel or any superior properties of the Laurent steel, and that Dr. Brown did not sufficiently explain why one of skill would look to an older reference for the base steel. CIB at 100 (citing Tr. (Raabe) at 1066:11-16); CRB at 48.

Upon consideration of the arguments of the parties and the evidence of record, the undersigned finds that Respondents have shown, by clear and convincing evidence, that one of skill in the art would have had a reason to use the base steel of Laurent for the USIBOR 1500 steel disclosed in Lachmann, and that such a substitution would have been simple and routine for one of skill in the art.

As Dr. Brown explained, Laurent discloses that the base steel with the particular elemental compositions described and claimed therein have "very high mechanical resistance after thermal treatment." RX-0109.2 at 1:47-62; Tr. (Brown) at 888:1-5. Lachmann, in turn, evidences a concern with the mechanical properties of the described products after hot-stamping, reporting the mechanical strength. *See* RX-0062.6; RDX-0002C.165. Moreover, Lachmann discloses the use of USIBOR 1500, Tr. (Brown) at 882:18-883:4, and as Dr. Brown noted, Laurent is a patent by the maker of USIBOR 1500. *See* Tr. (Brown) at 887:20-25 ("[I]f someone is interested in examining ways to improve the properties of a product, I think the most obvious thing would be to look at the literature provided by the manufacturer of that product."). Further,

witnesses at the hearing—and ArcelorMittal's counsel—referred to Laurent as a patent on USIBOR steel. *See* Tr. (Drillet) at 149:2-7 ("[Q]: Specifically, you're talking about the '805 patent; is that right? [A]: Yes, it is. This one is the first – it's the patent of 2001, yes. Its about 2001. Yeah. [Q]: This is the original Usibor patent; correct? [A] Yes."); Tr. (Compl. counsel) at 39:5-8 (describing Laurent as "actually a patent that involves aspects of the Usibor steel"); CDX-0005C.6 (identifying Laurent as "Usibor Patent – Starting Point for the Asserted Patents"). The undersigned is persuaded that the use of the base steel described in Laurent—which the inventor and ArcelorMittal's counsel admit relates to USIBOR steel—in place of Lachmann's USIBOR 1500 base steel is a simple and obvious substitution (to the extent a "substitution" is even required).[113] ArcelorMittal has not persuasively countered the clear and convincing evidence showing the simplicity of using Laurent's base steel in place of Lachmann's USIBOR base steel. *See, e.g.*, *Cablz, Inc. v. Chums, Inc.*, 708 F. App'x 1006, 1013 (Fed. Cir. 2017) (crediting analysis that "simple substitution" of elements was "strong evidence of obviousness").

2. '602 Patent

Respondents contend that Lachmann, in combination with Laurent, renders obvious claims 3, 4, 7 and 8 of the '602 patent.

a. Claim 3

Claim 3 depends from claim 1, and requires in addition "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

[113] Indeed, it is not clear whether these steels are materially different. The evidence shows that the base steel described in Laurent and the USIBOR 1500 steel described in Lachmann have nearly identical compositions. *See* RX-0109.2 (Laurent composition by weight); *supra* Part VIII.C.3.c (discussing inherent characteristics of the USIBOR 1500 steel described in Lachmann).

comprises iron and impurities inherent in processing." '602 patent, cl. 3. ArcelorMittal does not dispute that the proposed combination of Lachmann and Laurent discloses this limitation, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed use of Laurent's USIBOR base steel in place of Lachmann's USIBOR base steel. *See supra* Part VIII.E.1. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is disclosed in Lachmann, and the undisputed evidence shows that the base steel in Laurent meets each of the claimed compositional ranges. *See* RX-0109.2 at 1:47-66.[114]

Accordingly, Respondents have shown by clear and convincing evidence that claim 3 of the '602 patent is taught by the combination of Lachmann and Laurent.

b. Claim 4

Claim 4 depends from claim 1, and requires in addition "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." '602 patent, cl. 4. ArcelorMittal does not dispute that the combination of Lachmann and Laurent discloses this limitation, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed substitution of one USIBOR

[114] Moreover, as discussed *supra*, Part VIII.C.3.c, Lachmann's disclosure of USIBOR 1500 inherently disclosed the claimed elemental composition by weight of claim 3 of the '602 patent and thus Lachmann anticipates the claim. This finding further supports the obviousness analysis here.

base steel for another USIBOR base steel. *See supra* Part VIII.E.1. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is disclosed in Lachmann, and the undisputed evidence shows that the base steel in Laurent meets each of the claimed compositional ranges. *See* RX-0109, 1:47-66.

Accordingly, Respondents have shown by clear and convincing evidence that claim 4 of the '602 patent is taught by the combination of Lachmann and Laurent.[115]

c. Claim 7

Claim 7 depends from claim 1, and requires in addition "wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42." '602 patent, cl. 7. ArcelorMittal does not separately dispute that this added limitation is met, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed use of Laurent's USIBOR base steel for Lachmann's USIBOR base steel. *See supra* Part VIII.E.1. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is disclosed in Lachmann, and the undisputed evidence demonstrates that the base steel in Laurent meets the recited weight ratio of titanium to nitrogen. *See* Tr. (Brown) at 885:16-23; RDX-0002C.136; RX-0109, 4:25-28.[116]

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[115] Moreover, as discussed *supra*, Part VIII.C.3.d, Lachmann's disclosure of USIBOR 1500 inherently disclosed the claimed elemental composition by weight of claim 4 of the '602 patent and thus Lachmann anticipates the claim. This finding further supports the obviousness analysis here.

[116] Moreover, the evidence indicates that Lachmann's USIBOR 1500 steel also meets the added limitations of claims 7 and 8, thus further supporting the obviousness analysis here. *See* RX-0044.20 (USIBOR 1500 composition from 2004 identifying max titanium composition (0.05) and max nitrogen composition (0.009), which is ratio of 5.5); CX-0669C.2 (USIBOR 1500 composition from 2021 identifying same max titanium composition (0.05%) and max nitrogen composition (0.01%), which is ratio of 5); '602 patent, 11:48-53, 12:32-42 (identifying titanium composition of 0.038% and nitrogen composition of 0.005% in Example 1 and Figure 1, which is a ratio of 7.6); Tr. (Drillet) at 162:7-10 (testifying that Magna part from TAV report was made of USIBOR 1500); Tr. (Fekete) at 627:1-5 (testifying that Magna part from TAV report is Figure 1 of the Asserted Patents) ; RIB at 103.

Accordingly, Respondents have shown by clear and convincing evidence that claim 7 of the '602 patent is taught by the combination of Lachmann and Laurent.

d. Claim 8

Claim 8 depends from claim 2, and requires in addition "wherein a ratio of titanium to nitrogen in the base steel in weight % is in excess of 3.42." '602 patent, cl. 8. ArcelorMittal does not separately dispute that this added limitation is met, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed use of Laurent's USIBOR base steel for Lachmann's USIBOR base steel. *See supra* Part VIII.E.1. In addition, the evidence demonstrates that the base steel in Laurent meets the recited weight ratio of titanium to nitrogen. *See* Tr. (Brown) at 885:16-23; RDX-0002C.136; RX-0109, 4:25-28. As discussed above, Respondents have shown by clear and convincing evidence that claim 2 is disclosed in Lachmann, and Respondents have shown that the additional limitation of claim 7—which is identical to the additional limitation of claim 8—is disclosed by the combination of Lachmann and Laurent.

Accordingly, Respondents have shown by clear and convincing evidence that claim 8 of the '602 patent is taught by the combination of Lachmann and Laurent.

3. '227 Patent

Respondents contend that Lachmann, in combination with Laurent, renders obvious claims 16 and 17 of the '227 patent.

a. Claim 16

Claim 16 depends from claim 1, and requires in addition "wherein the base steel consists of the following components by weight based on total weight: 0.15%<carbon<0.5%;

.5%<manganese<3%; 0.1 %<silicon<0.5%; 0.01 %<chromium<l %; titanium<0.2%; aluminum<0.1%; phosphorus<0.1 %; sulfur<0.05%; 0.0005%<boron<0.08%; a remainder being iron and impurities inherent in processing."." '227 patent, cl. 16. ArcelorMittal does not dispute that the combination of Lachmann and Laurent discloses this limitation, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed use of Laurent's USIBOR base steel for Lachmann's USIBOR base steel. *See supra* Part VIII.E.1. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is disclosed in Lachmann, and the undisputed evidence shows that the base steel in Laurent meets each of the claimed compositional ranges. *See* RX-0109, 1:47-66.[117]

Accordingly, Respondents have shown by clear and convincing evidence that claim 16 of the '227 patent is taught by the combination of Lachmann and Laurent.

b. Claim 17

Claim 4 depends from claim 1, and requires in addition "wherein the base steel consists of the following components by weight based on total weight: wherein the base .steel consists of the following components by weight based on total weight: 0.l5%<carbon<0.25%, 0.8%<manganese<l .8%, 0.10%<silicon<0.35%, 0.01 %<chromium<0.5%, titanium<0.l %, aluminum<0.l %, phosphorus<0.l %, sulfur<0.05%, 0.002%<boron<0.005%, a remainder being

[117] Moreover, as discussed *supra*, Part VIII.C.3.c-d, Lachmann's disclosure of USIBOR 1500 disclosed the claimed elemental composition by weight as an inherent characteristic of USIBOR 1500 for purposes of claims 3 and 4 of the '602 patent. Respondents' post-hearing brief did not argue that claims 16 and 17 of the '227 patent—which are nearly identical to claims 3 and 4 of the '602 patent—were inherently anticipated, but the same evidence would render claims 16 and 17 of the '227 patent inherently anticipated by Lachmann's disclosure of USIBOR 1500 and further supports the obviousness analysis here, including the reason to combine and reasonable expectation of success.

iron and impurities inherent in processing." '227 patent, cl. 17. ArcelorMittal does not dispute that the combination of Lachmann and Laurent discloses this limitation, other than to dispute whether one of skill in the art would have had reason to combine the references. *See* CIB 99-100; CRB at 48. For the same reasons discussed above, *supra*, the undersigned finds this argument unpersuasive in view of the simplicity of the proposed use of Laurent's USIBOR base steel for Lachmann's USIBOR base steel. *See supra* Part VIII.E.1. As discussed above, Respondents have shown by clear and convincing evidence that claim 1 is disclosed in Lachmann, and the undisputed evidence shows that the base steel in Laurent meets each of the claimed compositional ranges. *See* RX-0109, 1:47-66.

Accordingly, Respondents have shown by clear and convincing evidence that claim 17 of the '227 patent is taught by the combination of Lachmann and Laurent.

4. Secondary Considerations of Non-Obviousness

ArcelorMittal argues that "overwhelming evidence" of secondary considerations—including commercial success, long-felt need, industry praise, and unexpected results—demonstrate that the claimed inventions are non-obvious. ArcelorMittal states that it was not until after the invention of the Asserted Patents that USIBOR experienced commercial success in the form of licenses and increased sales. CIB at 101 (citing Tr. (Drillet) at 172:7-10, 147:22-148:6; Tr. (Raabe) at 1066:22-1067:20); Tr. (Fekete) at 716:1-14; CX-0565C.13; Tr. (LeBlanc) at 339:15-343:6). As to long-felt need, industry praise, and unexpected results, ArcelorMittal argues that the Asserted Patents met a need for "high-strength steel that displayed better weldability, paintability, and better corrosion resistance." CIB at 102 (citing Tr. (Raabe) at 1067:21-1068:8; Tr. (Fekete) at 381:21-383:17).

Respondents contend that ArcelorMittal's secondary considerations arguments fail because there is insufficient nexus between the alleged secondary considerations and the inventions of the Asserted Patents. RIB at 104. Respondents argue that sales of pre-coated USIBOR cannot constitute evidence of commercial success because pre-coated USIBOR already existed and is not claimed by the Asserted Patents. RIB at 104-06. Respondents also argue that the primary evidence of commercial success from increased sales is, in fact, a projection for demand between 2015 and 2025, rather than a demonstration of actual sales. RIB at 106-07 (citing CX-0565C.13). Moreover, Respondents argue that there is no evidence of sales between the alleged invention in 2006 and 2010, and that in previous proceedings, ArcelorMittal's own expert, Dr. Fekete, testified that as of 2010, USIBOR 1500 was not a commercial success. RIB at 108 (citing Tr. (Fekete) at 713:12-714:3). Respondents also argue that Dr. Raabe's testimony on long-felt need and unexpected results was "vague [and] unsupported" and did not identify how the long-felt need was met by specific claimed features of the Asserted Claims. RIB at 109-110.

ArcelorMittal, in reply, argues that the evidence of commercial success is not speculative for the period from 2010 to 2015 and that the "projections" relied upon have been borne out by "the substantial economic domestic industry." CRB at 49. ArcelorMittal argues that Dr. Fekete's 2010 testimony is consistent, as it establishes that USIBOR 1500 before the Asserted Patents was not a commercial success. CRB at 49. As to long-felt need and unexpected results, ArcelorMittal argues that Dr. Raabe's testimony is consistent with Dr. Drillet's testimony, and that the fact that other products exhibited good weldability and corrosion resistance does not mean that "their performance was satisfactory in the industry." CRB at 49.

"Secondary considerations include whether the claimed invention has been commercially successful, whether it solved a long-felt but unsolved need in the art, and whether the relevant

industry praised it. To be relevant, such a secondary consideration must have a 'legally and factually sufficient connection' (nexus) to the claimed invention." *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1363 (Fed. Cir. 2023), *cert. denied*, *MacNeil IP LLC v. Yita LLC*, 144 S. Ct. 499 (2023) (internal citations omitted).

ArcelorMittal's primary evidence of commercial success is related to alleged increase in sales of USIBOR 1500. *See* CX-0565C.13; Tr. (Drillet) at 147:22-148:6. ArcelorMittal cannot rely on a presumption of nexus, because there is no dispute that USIBOR 1500 is a precursor product and is not—by itself—covered by the claims of the Asserted Patents. *See* Tr. (Brown) at 901:20-25; Tr. (Fekete) at 669:15-20 ("In the state as they roll off the steel mill processing line, no, they don't practice. They don't practice until they're hot stamped."); *see also Yita*, 69 F. 4th at 1363 (nexus is only presumed when "a commercial product (if relevantly successful, for example) 'is the invention disclosed and claimed in the patent'"). Rather, ArcelorMittal must show that "the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention.'" *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019). The evidence, however, is insufficient to show such a direct relationship. Evidence in the record demonstrates that as of December 2004—well before the claimed invention—consumption of flat boron steels (such as USIBOR 1500) was anticipated by 2006 to "highly increase" to 170-190 kilotons (e.g., 170,000 to 190,000 tons) in Europe, with "[t]he same tendency [] envisaged in Japan and in North-America." RX-0049.2 ("[T]he precoated solution should dominate the market in the next two years."); *see also* CX-0565C.9 (identifying use of press-hardened steel in VW Passat in 2004 as "MAJOR break-through" such that the "race was

on.")[118] An increase in sales of USIBOR 1500, then, began before the claimed invention. Under these circumstances, and given the evidence of record, the undersigned is not persuaded that ArcelorMittal has shown that the increase in sales of USIBOR 1500 was "a direct result of the unique characteristics of the claimed inventions." *See Fox Factory*, 944 F.3d at 1374.

As to licenses of the Asserted Patents, the evidence similarly fails to establish a nexus. ArcelorMittal primarily relies on the testimony of Mr. Peter LeBlanc, who testified as to licenses. *See* CIB at 101 (citing Tr. (LeBlanc) at 339:15-343:6). Mr. LeBlanc testified that three steel manufacturers—ThyssenKrup Steel, Cleveland-Cliffs, and ArcelorMittal's joint venture at Calvert—had licenses to the Asserted Patents, but each of the licenses are portfolio licenses, and ArcelorMittal has not identified persuasive testimony or evidence that the licenses were the "direct result" of the claimed inventions in the Asserted Patents. *See* CX-0031C (AM/NS Calvert License); CX-0035C (ThyssenKrup Steel License); CX-0034C (Cleveland-Cliffs License);[119] *Fox Factory*, 944 F.3d at 1374.

As to long-felt need and unexpected results, ArcelorMittal primarily relies upon Dr. Raabe's testimony, which was, in total:

> [Q]: Did you look at long-felt need and praise, or unexpected results?
>
> [A]: Yes. Also through, I think, my very long experience working with automotive people in conjunction with wanting better materials, and better steel, specifically, with all these other features, like weldability and so on, there is a big permanent need to get such a product in your hand and in

[118] The same presentation relied upon by ArcelorMittal to demonstrate commercial success also shows that the use of hot-stamped boron steels was driven by "federal fuel economy requirements," "federal safety requirements," and "design/styling/assembly requirements." *See* CX-0565C.4; *see also* Tr. (Raabe) at 1184:4-1185:8 (testifying that weight reduction is "biggest target" and weight reduction in bolt-on parts by use of USIBOR 1500 is "very important, but it has very little to do with the patent claims").

[119] For example, the license between Cleveland-Cliffs predecessor (AK Steel) and ArcelorMittal was the result of litigation, *see* CX-0034C.1, and the portfolio license for the Calvert joint venture includes significant technology and know-how transfer beyond the patent licenses. *See generally* CX-0031C.

> your car, because it has so many benefits that we have discussed during this week. So I found that a very convincing point.
>
> [Q]: How about unexpected results?
>
> [A]: The unexpected results is, I think, what we could wisdom [sic] during this week, during the discussion, during Dr. Drillet's testimony, nobody was able to do something like that. I think there was so many benefits coming out of that. So also, yes. Highly unexpected results. Very valuable product.

Tr. (Raabe) at 1067:23-1068:16; *see* CIB at 102. This testimony is not persuasive, however, as it is conclusory and contradicted by other evidence in the record that good weldability existed through the hot-stamping of USIBOR 1500 prior to the Asserted Patents. *See* RX-0049.2 (Kefferstein); Tr. (Raabe) at 1143:15-23. Moreover, even if Dr. Raabe's testimony is credited, the undersigned finds that it does not overcome the strong evidence of obviousness discussed above. *SkinMedica, Inc. v. Histogen Inc.,* 727 F.3d 1187, 1210 (Fed. Cir. 2013) (emphasizing that expert opinions that "are conclusory and incomplete" have little evidentiary value); *I/P Engine, Inc. v. AOL Inc.,* 576 F. App'x 982, 992 (Fed. Cir. 2014) (finding that "conclusory" expert testimony as to unexpected results and praise did not "overcome the strong prima facie case of obviousness").

* * *

Accordingly, for all the reasons discussed above, Respondents have shown by clear and convincing evidence that claims 3, 4, 7 and 8 of the '602 patent and claims 16 and 17 of the '227 patent are obvious over the combination of Lachmann and Laurent.

F. Anticipation by Process Parameters in DI Direct Products

Respondents also argue that "ArcelorMittal cannot resolve the tension between its incredibly broad technical domestic industry theories and its narrow validity theories," contending that to the extent ArcelorMittal argues that the hot-stamping of any DI Precursor

Product practices the Asserted Patents, the Asserted Patents are invalid because hot-stamping of DI Precursor Products was done.[120] Respondents also specifically assert that to the extent Magna's DI Direct Products are found to practice the Asserted Patents, a hot-stamping control plan from Magna dated August 2, 2004, with a revision date of August 22, 2006, anticipates the claims in the same way as the Magna DI Direct Products because Magna's corporate representative testified that the hot-stamping process has remained consistent. RIB at 65-66 (citing RX-1277C.43 ([redacted] (Magna) Dep. Tr.) at 171:5-172:2; RX-0056C; RDX-0002C.223).

ArcelorMittal argues that there is no evidence or testing of the part Magna allegedly hot-stamped prior to the critical date, and that there is no evidence that the process in the control plan is the same as used in the Magna DI Direct Products today. CIB at 107; CRB at 51. ArcelorMittal also argues that the control plan revision date is after the alleged earlier conception date. CRB at 50.

Respondents' arguments—which do not put forward a separate limitation-by-limitation analysis, but instead essentially rely on the analysis of the DI Direct Products, *see* RIB at 53 ("the element-by-element for invalidity is the same as what ArcelorMittal has presented for technical domestic industry")—require crediting the assertion that a part created according to Magna's 2004 (revised in 2006) control plan would be the same as the tested Magna DI Direct Products. The undersigned is not persuaded that Respondents have established this prerequisite by clear and convincing evidence.

[120] Notably, ArcelorMittal abandoned its contention that any hot-stamping of a DI Precursor Product would practice the Asserted Patents for purposes of technical domestic industry. *See* CIB at 48; RRB at 6. The premise of Respondents' argument as to prior art hot stamping parameters, then, no longer exists. *See* RRB at 16 ("[I]f any hot-stamping of USIBOR is found to satisfy the Asserted Claims for purposes of technical domestic industry, the Asserted Claims are also invalid in light of the overlapping parameters found in the prior art."). ArcelorMittal no longer argues—and the undersigned did not find—that "any" hot-stamping of USIBOR satisfies the Asserted Claims for purposes of domestic industry. Respondents' argument is, accordingly, rejected.

As discussed above, the undersigned found that there is insufficient evidence that—even today—the tested DI Direct Products manufactured by Magna are representative of untested DI Direct Products manufactured by Magna. *See supra* Part VI.A. To find, then, that products hot-stamped by Magna nearly 20 years ago are the same as those manufactured today is a leap that is unsupported by the evidence of record, including the evidence on technical domestic industry that three of the five tested DI Direct Products—a majority of the tested parts manufactured by Magna—did not include the claimed four-layer structure and are not alleged to practice the Asserted Patents.[121] *See* Tr. (Fekete) at 544:14-17. Accordingly, upon review of the evidence in the record and the arguments of the parties, the undersigned finds that Respondents have not—by clear and convincing evidence—come forward with evidence that a Magna part made according to the control plan from 2004 or 2006 would result in hot-stamped product that is the same as the tested Magna DI Direct Product, such that it would be proper to rely on that limitation-by-limitation analysis.

G. Indefiniteness

The "layer" terms—*i.e.*, "interdiffusion layer," "intermediate layer," "intermetallic layer," and "superficial layer"—appear in each independent claim of both of the Asserted Patents. Respondents contend that the "layer" terms are indefinite "because the intrinsic evidence fails to explain with reasonable certainty what a 'layer' is so that a [skilled artisan] could determine whether the claimed 'layer' is present or absent." RIB at 110. Respondents argue that the term "layer" is not defined in the specification, and that the "visual examples" of layers

[121] As discussed above, a sixth Magna part, the Kia B-Pillar—was tested but is not alleged to be a DI Direct Products and is not alleged to infringe because it is not made from a DI Precursor Product and does not meet the thickness limitations, although it allegedly does include the claimed four-layer structure. *See* Tr. (Fekete) at 549:19-24.

provided in Figures 1 and 2 "obscure" the boundary of claimed and unclaimed layers. Respondents state that the "layers" of Figure 1 of the Asserted Patents as "an instance where at least some of the purported 'layers' are reasonably well-defined band[s] extending horizontally with an apparent degree of homogeneity" such that a skilled artisan "could determine with reasonable certainty that the 'Intermediate layer' and the 'Al-rich intermetallic layer' . . . are in fact 'layers' within the imaged region of the sample." RIB at 111. As to Figure 2, which is not within the scope of the patent, the "Al-rich intermetallic layer" is described as a layer despite not being described as "not continuous" and not having a defined upper and lower bound. RIB at 112, 114. Respondents argue that one of skill in the art would be unable to determine with reasonable certainty the "upper and lower extent" of any layer. RIB at 113. Respondents argue that ArcelorMittal's witnesses provided varying understandings of what the term "layer" means, underscoring the purported indefiniteness. *See* RIB at 113-114 (citing RX-1282C.12 (Drillet Dep. Tr.) at 45:3-8 (defining layer as a band "defined by its chemical composition"); RX-1274C. 46 (Krishnan Dep. Tr.) at 181:4-182:3 (describing the "chemical composition or alloy" as "the unique identifier of that layer"); Tr. (Fekete) at 644:11-12 ("The definition of a layer is by its chemical composition. Its mean chemical composition."). To the extent that "layer" is defined by the chemical composition, Respondents argue that much of the remaining claim terms would be "superfluous." RIB at 114. Respondents argue that simply because experts were able to identify "layers" in the prior art does not render the term definite because there is "a zone of uncertainty" around the meaning of the claim. *See* RIB at 115 (citing *inter alia Mantissa Corp. v. First Fin Corp.*, No. 2022-1963, 2024 WL 607717, at *4 (Fed. Cir. Feb. 14, 2024)). Respondents also argue that the indefiniteness of the term is demonstrated by inconsistency in Dr. Fekete's identification of layers in SEM micrographs at deposition and at trial. *See* RIB at 115-19 (citing

Tr. (Fekete) at 656:7-658:9 (discussing RDX-1148 and CX-0109C.2, 663:16-665:18 (discussing RDX-1160 and CX-0114C.15)); RRB at 66-67.

ArcelorMittal argues that the term is not indefinite, as sufficient objective guidance is provided in the claims and specification. ArcelorMittal states that the claims define each of the required layers by their "distinct first, second, third, and fourth mean (iron or aluminum) composition." CIB at 108. ArcelorMittal contends that this is consistent with the depictions of the layers in the SEM micrographs in Figure 1, which depicts the claimed layers, as the differently colored layers are a result of the different mean elemental compositions. CIB at 108-09 (citing Tr. (Bradley) at 746:18-747:14). As to Figure 2, which the Asserted Patents describe as not within the scope of the invention, as only two "layers" are described; ArcelorMittal argues that this counter-embodiment uses the same elemental composition to distinguish "layers." CIB at 109 (citing '602 patent, Fig. 2, 3:57-61). Other prior art—including references cited on the face of the patent—use "layer" consistently to describe coatings with phases that differ in thickness and elemental composition. CIB at 110 (citing RX-0063.14 (Engels); RX-0109.3 (Laurent); RX-0104.8 (Takagi); RX-0022.4-5 (Suehiro II)). Although ArcelorMittal contends that the intrinsic evidence is clear and expert testimony is irrelevant, ArcelorMittal argues that Respondents' technical expert Dr. Brown was able to identify "layers" in the prior art, supporting the definiteness of the term. CIB at 110 (citing Tr. (Brown) at 837:3-838:8; *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1380 (Fed. Cir. 2017); CRB at 55. ArcelorMittal argues that the testimony of ArcelorMittal witnesses is consistent with the understanding that the claimed "layers" are defined by their mean chemical composition. CIB at 111 (citing Tr. (Krishnan) at 213:6-12; Tr. (Fekete) at 481:8-482:1; RX-1282C.12 (Drillet Dep. Tr.) at 45:3-8). As to Respondents' argument regarding Dr. Fekete's testimony about redacted SEM micrographs,

ArcelorMittal contends that Dr. Fekete's infringement analysis involved more than comparison of a single SEM micrograph to Figure 1 or Figure 2 of the patent, including line scans and spot EDS data, that make his testimony regarding the redacted images irrelevant. CIB at 111-12 (citing Tr. (Fekete) at 660:8-19); CRB at 55-57.

In response, Respondents state that they do "not contend that a POSITA lacks any understanding as to the scope of the claimed layer terms," but rather that "the term is tainted with a 'zone of uncertainty' such that '[t]he public is not apprised of what is claimed in the patent.'" RRB at 65-66 (citing *Mantissa*, 2024 WL 607717, at *4). Specifically, Respondents contend that the impermissible "zone of uncertainty" is "in determining whether islands of materials that are interspersed in a backdrop of other material constitutes a layer," rendering the term indefinite. RRB at 66-67.

Upon consideration of the parties' arguments and the intrinsic record, Respondents have not established by clear and convincing evidence that the "layer" terms—*i.e.*, "interdiffusion layer," "intermediate layer," "intermetallic layer," and "superficial layer"—are indefinite.

A claim term may be indefinite if, viewed in the light of the specification and the prosecution history, it fails to "inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Indefiniteness, like all invalidity defenses, must be established by clear and convincing evidence. *See, e.g.*, *One-E-Way, Inc. v. Int'l Trade Comm'n*, 859 F.3d 1059, 1062 (Fed. Cir. 2017) ("We presume that patents are valid, so '[a]ny fact critical to a holding on indefiniteness . . . must be proven by the challenger by clear and convincing evidence.'") (alteration in original). In evaluating indefiniteness, "[o]ne must bear in mind . . . that patents are 'not addressed to

lawyers, or even to the public generally,' but rather to those skilled in the relevant art." *Id.* (quoting *Nautilus*, 572 U.S. at 909).

Respondents do "not contend that a POSITA lacks any understanding as to the scope of the claimed layer terms." RRB at 65-66. Rather, the question is whether sufficient guidance is provided to give one of ordinary skill reasonable certainty as to the scope of the claims. *See Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1285 (Fed. Cir. 2023). Here, the evidence indicates that the claim language and specification of the Asserted Patents inform a person of ordinary skill about the scope of the invention with "reasonable certainty," which does not require "absolute or mathematical precision," and Respondents have not shown clear and convincing evidence to the contrary. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017).

Beginning with the claims, the claims provide guidance that each of the claimed layers has a different mean iron and/or aluminum composition, and provides the structural relationship of the layers from the base steel, to the interdiffusion layer, then the intermediate layer, followed by the intermetallic layer, and finally, the superficial layer. *See, e.g.*, '602 patent, cl. 1 ("wherein the coating includes, proceeding from the base steel outwards . . . an interdiffusion layer having a first mean iron composition . . . an intermediate layer having a second mean iron composition . . . an intermetallic layer having a third mean iron composition different from the first and second mean iron compositions . . . a superficial layer having a fourth mean iron composition different from the third mean iron composition"); *see also* Figs. 1, 2 (identifying "Al[uminum]-rich intermetallic layer"). As Dr. Bradley, Respondents' scanning electron microscopy expert, explained, the difference in elemental composition is what causes different "colors" to appear in a SEM micrograph, such as that those in Figures 1 and 2 of the Asserted Patents:

> "[T]he yield of backscattered electrons coming off a specimen under electron radiation depends on the atomic number of the target material. So, for example, a high atomic number, species like iron, will give bright contrast in a backscattered image. Conversely, lighter elements, for example, aluminum silicon, will give less brightness or contrast in the backscattered image. For example, in this backscattered image here, the brightest regions is the middle substrate, which of course is rich in iron, and darker regions within the coating on that substrate usually contain more aluminum and silicon relative to iron."

Tr. (Bradley) at 747:2-14 (referencing RDX-0004C.12 (depicting RX-0086)). The Asserted Patents depict the claimed layers in Figure 1 and provide preferred compositions and hardness for each layer. *See, e.g.*, '602 patent, 6:27-51 ("Interdiffusion layer, preferably with medium hardness (e.g., HV50g between 290 and 410, HV50g designating the hardness measured under a load of 50 grams) in a preferred embodiment this layer has the following composition by weight: 86-95% Fe, 4-10% Al, 0-5% Si."). The Asserted Patents also describe the conditions necessary to achieve the claimed four-layer structure and provides working examples. *See* '602 patent, 7:1-35, Fig. 7, 11:48-12:28. Finally, the Asserted Patents provide examples of layers that are not within the scope of the invention. *See* Fig. 2, 3:57-61 ("FIG. 2 illustrates a coating of a steel substrate after heat treatment and stamping which does not correspond to the invention. This succession of layers (interdiffusion layer and intermetallic layer) yields inferior results in resistance spot welding."), 12:61-13:26 (contrasting weldability of the Fig. 1 embodiment and a coating where "the pale intermetallic layer (c) is not continuous and appears as to be scattered within the coating" and "[a]bout 50% of this layer is present at the extreme surface of the part," noting that compared to "the coating with mixed and discontinuous layers," "the coating according to the invention, yields much more satisfactory results"). Accordingly, the Asserted Patents provide requirements for chemical compositions and hardness, examples of how to achieve the claimed layers, and points of comparison of what are—and are not—within the scope of the claimed layers.

In similar circumstances, the Federal Circuit has found the provision of specific requirements, examples, and standards in the specification to provide sufficient objective boundaries to avoid indefiniteness. *See Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1379 (Fed. Cir. 2017) (holding "visually negligible" to be definite based on a "general exemplary design," "requirements for the graphical indicators being negligible to human eyes," and "two specific examples of visually-negligible indicators"); *Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1349 (Fed. Cir. 2022) (holding "pliable" and "resilient" to be definite based on identification of exemplary "pliable" and "resilient" materials and claim language identifying requirement that the materials have "shape memory"); *Guangdong Alison Hi-Tech Co. v. Int'l Trade Comm'n*, 936 F.3d 1353, 1361 (Fed. Cir. 2019) (holding "lofty batting" to be definite based on identification of specific examples and distinction of "lofty batting" from prior art "fibrous mat").[122]

Because "the written description is key to determining whether a term of degree is indefinite," *Sonix*, 844 F.3d at 1378, the evidence above is sufficient to dispose of this issue. *See Guangdong Alison*, 936 F.3d at 1361. Additional evidence, however, provides further support for

[122] The cases cited by Respondents are inapposite. In *Mantissa* (*see* RIB at 115), the claim term "transaction partner" did not appear in the specification or in the claims as originally filed, and thus the specification and claims failed to provide adequate guidance as to the identity of the transaction partner. *Mantissa Corp. v. First Fin. Corp.*, No. 2022-1963, 2024 WL 607717, at *4 (Fed. Cir. Feb. 14, 2024). Here, as discussed above, both the claims and the specification provide guidance as to the scope of the claimed layers. In *Vstream* (*see* RIB at 115), the term "sufficiently correct" was found to be indefinite as a "subjective" term without "any additional examples or guidance that would provide objective boundaries for the meaning of the term." *Vstream Techs., LLC v. PLR Holdings, LLC*, No. 6:15CV974-JRG-JDL, 2016 WL 6211550, at *6 (E.D. Tex. Sept. 27, 2016), *report and recommendation adopted*, No. 6:15-CV-974-JRG-JDL, 2016 WL 6159624 (E.D. Tex. Oct. 24, 2016). Here, again, both the claims and specification provide guidance and examples of the claimed layers. In *Berkheimer* (*see* RRB at 65), the court found the term "minimal redundancy" to be indefinite as a term of degree without sufficient guidance as to how much redundancy may be permissible. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018). Here, "layer" is not a term of degree, and the Asserted Patents provide "points of comparison." *Contra id.* ("The specification contains no point of comparison for skilled artisans to determine an objective boundary of 'minimal' when the archive includes some redundancies.").

the objective boundaries of the "layer" terms. Numerous prior art references use the term "layer" to refer to—as in the Asserted Patents—portions or phases of a coating with a particular elemental composition. For example, the Engels reference describes a SEM micrograph with "[f]ive phases which differ in their layer thickness and chemical composition." RX-0063.14. Likewise, the Laurent reference describes a "coating layer compris[ing] a first alloy layer in contact with the surface of the steel" and a "second coating layer, on top of the first, contain[ing] approximately 90% aluminum and may contain silicon and a small amount of iron." RX-0109.3 at 3:15-23; *see also* RX-0104.3 (Takagi) at Fig. 2A (labeling "outer layer" and "intermediate layer[s]" on SEM micrograph); RX-0022.4 (Suehiro II) at Fig. 12 (identifying "plating layer structure" in SEM micrograph). Moreover, both parties' experts (and third-party testing laboratories retained by ArcelorMittal) were able to identify the claimed layers in prior art references and/or accused products. *See, e.g.*, Tr. (Brown) at 826:1-6 ("[Q]: Turning to slide 42, let's start with Cornette. What are you showing here? [A]: This is the SAE paper from 2001, which Cornette as the first author, showing processing conditions for the Usibor 1500, published by Usinor, showing their labeled four-layer structure."), 829:19-22 (describing RDX-0002C.46 (depicting Suehiro II SEM micrograph and stating "I would describe it as a four-layer microstructure"); Tr. (Fekete) at 483:22-484:9 ("[Q]: In performing these tests, did you tell the labs what you were looking for? [A]: When we gave them the protocol, we told them they should be looking for a four-layer structure. They should expect to see one. Sometimes they did, sometimes you know . . . most of the time they did. But that's all."), 488:2-12, 512:22-513:4 ("[Q]: Continuing through the claim, the claim recites the four different layers, the interdiffusion layer, intermediate layer, intermetallic layer, and the superficial layer. Did you find those four layers in each of the accused products? [A]: I found those four layers in each of the products.");

see also Guangdong Alison, 936 F.3d at 1361–62 ("While not dispositive, the application of these terms by the parties' experts . . . further supports our conclusion that the challenged claim term is not indefinite.").[123]

Respondents have not presented persuasive evidence that the ordinarily skilled artisan would not have understood the "layer" terms with reasonable certainty. Rather, Respondents' arguments—and Dr. Fekete's testimony regarding the redacted SEM micrographs,[124] *see* RIB at 115-119; RRB at 67—are akin to disagreements as to whether the coatings of particular Accused Products constitute the claimed layers. This does not, however, constitute clear and convincing evidence of indefiniteness. *See Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1290 (Fed. Cir. 2023) ("reasonable disputes over infringement do not make a patent claim indefinite"); *cf. SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1340-41 (Fed. Cir. 2005) ("The test for indefiniteness does not depend on a potential infringer's ability to ascertain the nature of its own accused product to determine infringement, but instead on whether the claim delineates to a skilled artisan the bounds of the invention."). Nor does the use of the term "layer" in the Asserted Patents to refer to embodiments that are not within the scope of the invention, *e.g.*, Fig. 2 and the example at 12:61-13:11, render the claimed "layer" terms indefinite; to the contrary, the Federal Circuit has found that examples that fall outside of the claims provide objective boundaries to one of skill in the art. *See, e.g.*, *Guangdong Alison Hi-Tech Co. v. Int'l Trade Comm'n*, 936 F.3d 1353, 1361 (Fed. Cir. 2019) ("The specification thus distinguishes a lofty

[123] Respondents' expert, Dr. Brown, did not provide contrary testimony; he referenced indefiniteness only on cross-examination

[124] The undersigned also notes, as discussed above, *supra* Part V.B.1.d, Dr. Fekete relied on more than SEM micrographs—including EDS scans indicating different mean elemental compositions—to determine whether the Accused Products included the claimed layers.

batting from the "fibrous mat" of the prior art—i.e., a 'densely woven or thickly tangled mass' that has minimal open space, a higher density, and lacks the resilience of a lofty batting.").

Accordingly, Respondents have not established by clear and convincing evidence that the "layer" terms—*i.e.*, "interdiffusion layer," "intermediate layer," "intermetallic layer," and "superficial layer"—are indefinite.

IX. CONCLUSIONS OF LAW

Based on the foregoing, and the record, it is the undersigned's final initial determination that there has not been a violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and/or the sale within the United States after importation of certain video processing devices and products containing the same by reason of infringement of claims 1-3, 5-10, 12, 20-22, 24-26 and 28 of U.S. Patent No. 10,961,602 or claims 1-2, 4-11, 13, 15-17, 22, and 24-25 of U.S. Patent No. 11,326,227.

This determination is based on the following conclusions of law:

1. The Accused Products have been imported into the United States, sold for importation, and/or sold within the United States after importation.

2. Claims 1-3, 7-9, 20-22, 24 and 26 of the '602 patent are infringed by the Accused Products.

3. Claims 1, 2, 4, 5, 7-11, 13, 15-17, and 24 of the '227 patent are infringed by the Accused Products.

4. Claims 5, 6, 10, 12, 25 and 28 of the '602 patent and claims 6, 22, and 25 of the '227 are not infringed, as no evidence or argument related to infringement of those claims was presented at the evidentiary hearing.

5. The technical prong of the domestic industry requirement has been satisfied for the '602 patent based on claims 1-4, 7-10, 18, 20-22, 24, and 26.

6. The technical prong of the domestic industry requirement has been satisfied for the '227 patent based on claims 1, 2, 4, 5, 7, 9, 10, 13, 15-17, and 24.

7. Claims 1-4, 7-10, 18, 20-22, 24, and 26 of the '602 patent are invalid: claims 1-4, 7-10, 18, 20-22, 24, and 26 of the '602 patent are invalid as anticipated by the Passat; claims 1-4, 20-22, and 24 of the '602 patent are invalid as anticipated by Lachmann; and claims 3, 4, 7, and 8 of the '602 patent are invalid as obvious over the combination of Lachmann and Laurent.

8. Claims 1, 2, 4, 5, 7-11, 13, 15-17, and 24 of the '227 patent are invalid: claims 1, 2, 4, 5, 7, 9, 10, 13, 15-17, and 24 of the '227 patent are invalid as anticipated by the Passat; claims 1, 2, 7-11, 13, 15, and 24 of the '227 patent are invalid as anticipated by Lachmann; and claims 16 and 17 of the '227 patent are invalid as obvious over the combination of Lachmann and Laurent

9. The economic prong of the domestic industry requirement has been met for the '602 patent and the '227 patent.

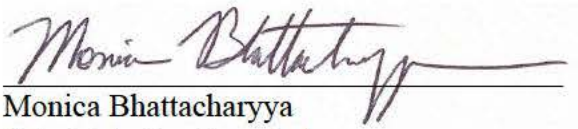
The undersigned hereby certifies the record in this investigation to the Commission with the undersigned's final initial determination. Pursuant to Commission Rule 210.38, the record further comprises the complaint and exhibits thereto, and the exhibits attached to the parties' summary determination motions and the responses thereto. 19 C.F.R. § 210.38(a).

Pursuant to Commission Rule 210.42(h)(2), this initial determination shall become the determination of the Commission 60 days after the service thereof, unless a party files a petition for review pursuant to Commission Rule 210.43(a), the Commission orders its own review pursuant to Commission Rule 210.44. 19 C.F.R. § 210.42(h)(2).

This initial determination is being issued with a confidential designation pursuant to Commission Rule 210.5 and the protective order in this investigation. Within 10 days of the date of this document, the parties shall submit a joint statement as to whether or not they seek to have any portion of this document deleted from the public version. If the parties do seek to have portions of this document deleted from the public version, they must submit a single proposed public version of this final initial determination with any proposed redactions consistent with the

manner specified by Ground Rule 1.9.[125] The submission shall be made by email to Bhattacharyya337@usitc.gov and need not be filed with the Commission Secretary.

SO ORDERED.



Monica Bhattacharyya
Administrative Law Judge

[125] Redactions should be limited to avoid obscuring the reasoning underlying the decision. Parties who submit excessive redactions may be required to provide an additional written statement, supported by declarations from individuals with personal knowledge, explaining why each proposed redaction meets the definition for confidential business information in 19 C.F.R. § 201.6(a).