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**Datasheet for the decision  
of 8 June 2021**

**Case Number:** T 1166/19 - 3.3.05

**Application Number:** 13770720.4

**Publication Number:** 2877317

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C22C21/00, C22C21/14,  
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**Language of the proceedings:** EN

**Title of invention:**  
STRIP MATERIAL WITH EXCELLENT CORROSION RESISTANCE AFTER  
BRAZING

**Patent Proprietor:**  
Gränges Sweden AB

**Opponents:**  
Aleris Rolled Products Germany GmbH  
C-TEC CONSTELLIUM TECHNOLOGY CENTER /  
CONSTELLIUM NEUF-BRISACH  
Arconic Corporation  
Hydro Aluminium Rolled Products GmbH

**Headword:**  
Corrosion resistant brazing material/Gränges

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 112(1) (a)

**Keyword:**

Novelty - (yes)

Inventive step - non-obvious alternative

Sufficiency of disclosure - (yes)

Referral to the Enlarged Board of Appeal - (no)

**Decisions cited:**

G 0004/95, T 1817/15, T 1146/06, T 0241/10, T 0406/09,  
T 0295/08, T 0828/14, T 0238/92

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 1166/19 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 8 June 2021**

**Appellant:** Aleris Rolled Products Germany GmbH  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
18 February 2019 concerning maintenance of the  
European Patent No. 2877317 in amended form.**

**Composition of the Board:**

**Chairman** E. Bendl  
**Members:** J. Roider  
C. Almberg

## Summary of Facts and Submissions

I. The appeals filed by Opponent 1 (Appellant 1), Opponent 2 (Appellant 2) and Opponent 4 (Appellant 3) lie from the interlocutory decision of the Opposition Division to maintain the patent in amended form based on the then-auxiliary request 2 (now main request) filed during oral proceedings before the Opposition Division.

II. Documents cited

Documents relevant to the decision already cited in the opposition proceedings are as follows:

**D2a:** English machine translation of D2b

**D2b:** JP 2009-167509 A

**D3:** WO 2010/132018 A1

**D4:** US 2007/0166565 A1

**D5:** WO 03/089237 A1

**D11:** WO 2013/180630 A1

**D13:** US 2010/0291400 A1

**D14:** US 2008/0118393 A1

**D15:** Humphreys and Hatherly, "Recrystallization and related annealing phenomena", Pergamon, 2002, page 332

**D16:** Affidavit Ms. Daniélou, 2016

**D23:** EP 1 918 394 A2 (family member of D14, further references will only be to D14)

**D29:** US 7,514,155 B2

**D32:** Engler et al., "*Texture Evolution of an AA3xxx Alloy after Different Homogenisation Treatments*", Material Science Forum, Vols. 396-402, 2002

**D39:** Affidavit Ms. Daniélou, 2018

With its statement of grounds of appeal, Opponent 2 submitted the following document, among other things:

**CD46:** affidavit by Ms. Christine Nardin

With its statement of grounds of appeal, Opponent 4 submitted the following documents:

**D46:** JPH10-298686 A

**D46a:** English machine translation of D46

**D47:** JPH08-319531 A

**D47a:** English machine translation of D47

**D48:** US 2006/0003181 A1

III. The independent claims of the main request read:

*1. A corrosion resistant strip comprising a core of an aluminium based alloy, and an interlayer adapted to be located between the core and an Al-Si based clad; the interlayer having a composition consisting of in percentages by weight:*

*Si  $\leq$  0.9%*

*Fe  $\leq$  0.7%, preferably  $\leq$  0.5%, more preferably  $\leq$  0.3%,*

*Cu  $\leq$  0.5%, preferably  $\leq$  0.2%, more preferably  $\leq$  0.1%, most preferably  $\leq$  0.05%*

*Mn 0.9-1.8%, preferably 0.9-1.7%, more preferably 0.9-1.6%*

*Mg  $\leq$  0.7%, preferably  $\leq$  0.3%, more preferably  $\leq$  0.15%, most preferably  $\leq$  0.05%*

*Zn  $\leq$  0.1%*

*Ni  $\leq$  1.5%, preferably  $\leq$  1.0%, more preferably  $\leq$  0.5%, elements selected from group IVb, Vb, and/or VIb of the periodic table  $\leq$  0.3% each and  $\leq$  0.5% in total*

*$\leq$  0.05 wt% each and  $\leq$  0.15% in total, of unavoidable impurity elements,*

*balance Al;*

*wherein the composition of the core and the composition*

*of the interlayer are selected such that the core is more noble than the interlayer after brazing, and wherein the interlayer exhibits a volume fraction of a texture component of at least 30%, more preferably at least 50%, even more preferably at least 70%, most preferably at least 85%.*

*14. A method of producing a corrosion resistant strip comprising a core and an interlayer, the interlayer adapted to be located between the core and an Al-Si based clad, the method comprising providing a core ingot of an aluminium based alloy, attaching an interlayer to said core ingot, the interlayer having a composition consisting of in percentages by weight:*

*Si  $\leq$  0.9%*

*Fe  $\leq$  0.7%, preferably  $\leq$  0.5%, more preferably  $\leq$  0.3%*

*Cu  $\leq$  0.5%, preferably  $\leq$  0.2%, more preferably  $\leq$  0.1%, most preferably  $\leq$  0.05%*

*Mn 0.9-1.8%, preferably 0.9-1.7%, more preferably 0.9-1.6%*

*Mg  $\leq$  0.7%, preferably  $\leq$  0.3%, more preferably  $\leq$  0.15%, most preferably  $\leq$  0.05%*

*Zn  $\leq$  0.1%*

*Ni  $\leq$  1.5%, preferably  $\leq$  1.0%, more preferably  $\leq$  0.5%*

*elements selected from group IVb, Vb, and/or VIb of the periodic table  $\leq$  0.3% each and  $\leq$  0.5% in total*

*$\leq$  0.05 wt% each and  $\leq$  0.15% in total, of unavoidable impurity elements,*

*balance Al;*

*and wherein the core is more noble than the interlayer post brazing,*

*optionally subjecting the core ingot with the attached interlayer to a preheating heat treatment,*

*hot rolling to obtain a strip having a core and an interlayer,*

*cold rolling the obtained strip such that the*

*interlayer is reduced at least 90% in height, preferably at least 95%, more preferably at least 97.5%, after the last heat treatment causing recrystallization of the interlayer, heat treating the cold rolled strip to the delivery temper with the purpose to soften the material by a tempering without any recrystallization of the interlayer, wherein at least the interlayer is preheated to a temperature of 380-520°C prior to hot rolling so as to form dispersoid particles in the interlayer.*

*26. Use of a corrosion resistant strip according to any of claims 1 to 13 in the manufacture of a brazed product.*

Claims 2 to 13 refer to preferred embodiments of the corrosion resistant strip according to claim 1, claims 15 to 25 relate to preferred embodiments with respect to the method of claim 14, and claim 27 describes a brazed heat exchanger comprising the strip according to claims 1 to 13.

IV. The cases of the opposing parties can be summarised as follows:

*Admittance of oral presentations, claim requests and documents*

V. At the beginning of the oral proceedings, Opponent 4 requested permission for a person not previously announced to make oral submissions. Its representative argued that he was the supervisor of the person who would present the case for training purposes. Such oral submissions should therefore be admitted.



- VI. Opponent 2 requested that the main request be disregarded for the following reasons:

The main request was filed as the then-auxiliary request 2 only at 9:30 p.m. on the first day of the oral proceedings before the Opposition Division. The opponents' request to grant time for searching new documents and to prepare for the new submission was refused. The then-new set of claims was presented in the oral proceedings only at the time that D2a was found novelty-destroying by the Opposition Division. The restriction of the Zn content was not foreseeable for the opposing parties.

- VII. Opponent 2 requested that CD46 filed with its grounds of appeal be admitted for the following reasons: CD46 was an affidavit by Ms Nardin describing tests carried out in conformity with the patent in suit. It was filed as a reaction to the reasons indicated in the Opposition Division's decision because the relevance of the choice of measurement method only became apparent during the oral proceedings in opposition. The electron backscatter diffraction (EBSD) measurement, according to the patent in suit, was carried out along a line parallel to the rolling direction, while with X-ray diffraction (XRD) the whole surface was measured, thus capturing the whole variety of the grain over the width of the strip as well. As shown in CD46, XRD thus delivered statistically more-representative results. CD46 also showed that the measurements with EBSD were not reproducible.

- VIII. Opponent 4 requested that D46-D48 be admitted for the following reasons: The combinations of the preferred ranges of claim 1 allowed for over 1000 permutations. The restriction to

a specific Zn content in auxiliary request 2 was not foreseeable. It was neither apparent from the examples nor from the auxiliary requests filed during the written opposition proceedings that restriction of the Zn content in the course of the oral proceedings before the Opposition Division could be expected.

If a document was novelty-destroying for a request, the opponent was not obliged to provide documents for all fallback positions, particularly in view of the high number of alternatives contained in the independent claim alone. Reference was made to T 0828/14, T 0241/10, T 1817/15 and T 0406/09. Additionally, D46 and D47 were *prima facie* relevant.

IX. Opponent 4 requested that questions be referred to the Enlarged Board of Appeal under Article 112(1)(a) EPC in the event that the Board was minded not to admit D46 to D48 into the proceedings. The questions, which were submitted during oral proceedings, read:

*"Ist es angesichts der bestehenden Rechtsprechung zusammengefasst in T 1817/15 und unter Verweis auf die Rechtsprechung T 238/92 (Gründe 2.2), T 1146/06 (Gründe 4.1), T 295/08 (Gründe 2.3), T 406/09 (Gründe 2.1.3), T 241/10 (Gründe 6.) und insbesondere T 828/14 (Gründe 1) ein legitimes Vorbringen des Einsprechenden, neue Dokumente mit der Beschwerdebegründung vorzubringen, wenn die Patentinhaberin am Ende des ersten Tages einer mündlichen Verhandlung in der ersten Instanz geänderte Patentansprüche einreicht, welche einem Neuheitsschädlichen Dokument D2a Rechnung tragen, obwohl in der Ladung der Einspruchsabteilung, in der das mit der Einspruchsfrist eingereichte Dokument D2a als relevant für die Neuheit gesehen wurde und die Einspruchsabteilung die geänderten Patentansprüche in das Verfahren eingeführt hat, ohne der Einsprechenden*

*eine Möglichkeit zur weitere Recherche zu geben?*

*Ist es angesichts des oben genannten Umstandes eine legitime Antwort des Einsprechenden auf das geänderte Vorbringen der Patentinhaberin neue Dokumente mit der Beschwerdebegründung vorzubringen, wenn die Änderungen der Patentinhaberin aus einer Vielzahl (mehrere Hunderte) von möglichen Änderungen des Patentanspruches 1 ausgewählt worden ist, wobei gleichzeitig aus einer Vielzahl von Merkmalen der beanspruchten Zusammensetzung für verschiedene Legierungselemente ausgewählt wurde."*

which translates as (translation by the Board):

*"In view of the existing case law summarised in T 1817/15 and with reference to T 238/92 (reasons 2.2), T 1146/06 (reasons 4.1), T 295/08 (reasons 2.3), T 406/09 (reasons 2.1.3), T 241/10 (reasons 6.) and particularly T 828/14 (reasons 1), is it a legitimate case of an opponent to file new documents with the statement of grounds of appeal if the Patent Proprietor files amended claims at the end of the first day of the oral proceedings in the department of first instance as a reaction to a novelty-destroying document D2a, although in the summons from the Opposition Division in which document D2a, which was filed during the opposition period, was deemed relevant to novelty, and the Opposition Division introduced the amended claims into the proceedings, without granting the Opponent the opportunity of a further search?*

*In view of the above circumstances, is it a legitimate reaction by the Opponent to the amended case of the Patent Proprietor to submit new*

*documents with the statement of grounds of appeal if the Patent Proprietor's amendments was [sic] selected from a large number (several hundreds) of possible amendments to claim 1, with at the same time a selection having been made from a large number of features of the claimed composition for different alloy components."*

Main request - sufficiency of disclosure

- X. The arguments of the opposing parties relating to sufficiency of disclosure (Article 83 EPC) can be summarised as follows:
- (a) The requirement of sufficiency of disclosure demanded that the skilled person could carry out the invention over substantially the whole scope of the claimed subject-matter. A single example was not enough if only some elements of the claimed range could be obtained. In the patent in suit there was however no guidance as to how to obtain other embodiments covered by the subject-matter of claim 1, e.g. how to obtain textures other than a P-texture or other volume fractions of a texture component. The only example in the patent in suit did not even follow the steps according to the claimed method.
  - (b) The "*volume fraction of a texture component*" was an unusual parameter. No industrial standard existed for measuring multilayered products. In particular, it was not defined what degree of misorientation could be accepted. EBSD required complex preparation of the sample and the skilled person had to select many measurement parameters, which were not disclosed in the description. Moreover, the characterisation of a product by its properties

was only allowable if these could be reliably measured.

- (c) It was not possible to determine without undue burden at what thickness the last recrystallisation step took place and how to determine the thickness of the interlayer. Since the interlayer was located between the core and the braze, it was not easily possible to find the interlayer, particularly when the Mn content of the core and the interlayer was the same.
- (d) Contrary to the Opposition Division's decision, the values obtained by EBSD and XRD were comparable. However, EBSD delivered widely diverging results for the same sample and XRD was statistically more representative. It was not possible for the skilled person to determine whether they were working inside or outside the claimed range.
- (e) There was no indication in the description as to how to obtain a core alloy which was more noble than the interlayer alloy, which was an essential feature and hence must be contained in the claims.
- (f) It was not defined to what parameter the size of a grain referred in the subject-matter of claim 13: it could be the maximum length, any equivalent diameter, etc.

Main request - novelty

- XI. Opponent 1 presented a line of novelty attack based on D13:  
In view of the Board's communication, Opponent 1 reconsidered document D13 and found that it anticipated

novelty of the subject-matter of claims 1 and 14. D13 was already cited and extensively discussed during the opposition proceedings. It should therefore not be considered a new document or a new line of attack.

XII. The appellants' further arguments relating to lack of novelty (Article 54(1) and (2) EPC) can be summarised as follows:

(a) The subject-matter of claim 14 lacked novelty over D4, Table 4, test sample 1. The sheet was hot-rolled at 500°C and cold-rolled with a rolling reduction of 93% (D4, [0059]) to form an H-tempered sheet, which included H1X and H2X temper. The formation of Mn dispersoids started as soon as this temperature was achieved and was thus inherent, particularly as no holding time was required. D4 disclosed that recrystallisation occurred at the filler-alloy melting temperature of 600°C (D4, [0026]). The intermediate annealing according to D4, at 380°C for 2 hours, thus provided only softening without any recrystallisation. This temperature fell within the temperature range in accordance with para. [0061] of the description and granted claim 13 of the patent in suit, which thus provided softening without recrystallisation. No soaking time was indicated in the claims. Moreover, claim 14 did not require the heat treatment to delivery temper to be performed as the final processing step.

(b) The subject-matter of claim 1 lacked novelty over D4 because the texture component was a direct consequence of subjecting the product obtained by the method according to claim 14 to a regular brazing cycle.

- (c) The subject-matter of claim 1 lacked novelty over D5, in particular examples A, M, N and O (para. [0041] together with Tables 2 and 3) because the interlayer contained a microstructure which did not undergo recrystallisation despite the annealing step. The strip according to D5 provided corrosion resistance during brazing. This was achieved by hot rolling at 525°C and subsequent cold rolling to final gauge. Thus the steps to provide the required volume fraction of the texture component were present. The subject-matter of claim 1 was thus implicitly disclosed.
  
- (d) The subject-matter of claim 1 lacked novelty over D11 because the volume fraction of a texture component was an unusual parameter, and the burden was on the Respondent to prove that it could be distinguished from the prior art. D11 indicated that large crystals were obtained, hence the volume fraction of a texture component should be considered contained in D11.
  
- (e) The subject-matter of claim 14 lacked novelty over D11 because the thickness of the strip was below that disclosed in the patent in suit and thus the cold-rolling reduction after the last heat treatment causing recrystallisation was equal to or higher than in the patent in suit.
  
- (f) The subject-matter of claim 1 lacked novelty over D29 because the volume fraction of a texture component was an unusual parameter, and the burden was on the Respondent to prove that it could be distinguished from the prior art. The thickness of the strip was around that disclosed in the patent in suit, and thus the cold-rolling reduction after

the last heat treatment causing recrystallisation was comparable to that in the patent in suit. Therefore the volume fraction of a texture component should be considered achieved by the product disclosed in D29.

- (g) The subject-matter of claim 14 lacked novelty over D29 because pre-heating was a well-known process step for manufacturing aluminium strips.
- (h) The subject-matter of claim 26 lacked novelty over D4, D11 and D29 because all the documents disclosed the use of the strip to manufacture a brazed product.

Main request - inventive step

XIII. The appellants' arguments relating to the lack of inventive step (Article 56 EPC) can be summarised as follows:

- (a) D4 could be considered as forming the closest prior art for the subject-matter of claim 14 because it disclosed an improvement in the corrosion resistance after brazing and moreover had the most relevant technical features in common. D4 did not disclose a cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer. The effect provided by this difference, of increasing the driving force for recrystallisation, was already mentioned in D4. The objective technical problem to be solved was to provide an alternative.
  - (i) D14 would be considered by the skilled person. It disclosed a sheet with an optional clad, thus optionally a multilayer



product, with a very low susceptibility to liquid film migration (LFM). It also disclosed heating the material to 470°C-520°C prior to hot rolling so as to form dispersoid particles. It moreover disclosed a cold-rolling reduction of more than 90% and softening the material to delivery temper H2X without any recrystallisation. Hence the skilled person would replace the homogenisation treatment disclosed in D4 with the heat treatment of D14 and ensure a cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer with a final H2X temper, thus providing an alternative process.

- (ii) In view of the Opposition Division's decision, it appeared that the Division might consider that D4 also disclosed a different starting material for hot rolling due to the homogenisation treatment. The problem to be solved was to improve the LFM resistance.  
The skilled person would carry out the above process steps when wanting to improve the LFM resistance as well.

- (b) D2a provided an enabling disclosure. In view of the composition of the alloys, it was immediately clear that in Table 5 comparative examples 33 and 36 contained a typographic error and "alloys l and q" should actually read "alloys p and s".

D2a could also be considered as forming the closest prior art to the subject-matter of claim 14 because

it had many technical features in common with it. The hot rolling was carried out at 460°C, thus anticipating the feature of pre-heating the interlayer to 380-520°C. The subject-matter of claim 14 differed from D2a in that the interlayer alloy composition comprised a Zn range of  $\leq 0.1\%$  whereas D2a allowed for 1 to 4% Zn. No effect related to this range was mentioned in the patent in suit, and thus the objective technical problem was to provide an alternative layered product with a more noble core than the interlayer.

- (i) D3 taught interlayer alloys with a content of Zn  $\leq 0.4\%$  in order to avoid certain disadvantages due to Zn in the interlayer. Cladding material A in Table 2 even showed a Zn content of less than 0.01%. Therefore the subject-matter of claim 14 lacked inventive step.
  - (ii) D4 disclosed an alternative interlayer alloy with no Zn, using a higher amount of Cu for the core alloy, so the subject-matter of claim 14 lacked inventive step.
  - (iii) D29 disclosed an alloy composition according to claim 14 of the patent in suit for providing high corrosion resistance, so the subject-matter of claim 14 lacked inventive step.
  - (iv) No technical effect was demonstrated by the differing features. The subject-matter of claim 14 thus lacked inventive step *per se*.
- (c) Since the product according to the subject-matter of claim 1 was a direct consequence of the method according to the subject-matter of claim 14, the subject-matter of claim 1 was implicitly disclosed

or rendered obvious.

(d) The use of the brazing sheet product in a heat exchanger was disclosed in both D4 and D2a, so the subject-matter of claim 26 lacked inventive step.

XIV. The Proprietor's (Respondent's) case can be summarised as follows:

Admittance with regard to oral submissions, claim requests and documents

The Opposition Division had correctly exercised its discretion to admit the then-auxiliary request 2, now main request. The amendment *prima facie* overcame the lack of novelty and met the requirements of Rule 80 EPC and Article 123(2) EPC. The then-auxiliary request 2 was presented in response to documents submitted by the opponents during the oral proceedings and admitted by the Opposition Division.

The proprietor requested that CD46 and D46 to D48 not be admitted. They were late-filed and could and should have been filed during the opposition proceedings. It was already apparent from the preliminary opinion of the Opposition Division that the arguments relating to the method of measurement by EBSD were not convincing. D46 to D48 formed the basis of a completely new line of attack which was a continuation of the opposition proceedings.

Although the limitation to  $Zn \leq 0.1\%$  was only done during the oral proceedings in opposition as a reaction to the new document D2b filed by the opponents, the desired restriction of the Zn content was apparent from filings on 9 October 2018, prior to the oral

proceedings. The opponents did not request more time to carry out an additional search.

Main request - sufficiency of disclosure

XV. The volume fraction of a texture component was a well-known and directly measurable microstructure component, as shown in D15, Fig. 10.5 and D32, Fig.1.

Even without a standardised measurement method, the skilled person was obviously able to establish the correct measurement parameters, in particular the acceptable misorientation, for a correct EBSD measurement as shown in D16 and D39, submitted by Opponent 2. No difficulties were reported in these affidavits.

EBSD gave the grain orientation directly, whereas XRD needed the measurement results to be converted. EBSD thus delivered the more precise result. Also, the problem of determining the position of the interlayer did not arise with EBSD.

Main request - novelty

XVI. The proprietor requested that the new novelty attack based on D13 not be admitted since it was late-filed and could and should have been filed with the statement of grounds of appeal.

XVII. The Proprietor's further arguments relating to the alleged lack of novelty (Article 54(1) and (2) EPC) can be summarised as follows:

(a) The subject-matter of claim 14 differed from D4 in a cold-rolling reduction after the last recrystallisation step of at least 90% after the last heat treatment causing recrystallisation of the interlayer. An annealing step at 380°C for two

hours inevitably yielded recrystallisation of the interlayer. Moreover, D4 did not disclose a heat treatment to delivery temper. D4 disclosed an H1X temper and not an H2X temper. Consequently, the product according to the subject-matter of claim 1 was also novel over D4, which did not mention a volume fraction of a texture component.

- (b) D5 disclosed neither a volume fraction of a texture component nor a closed composition for the interlayer alloy. The method further did not disclose the pre-heating step, the cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer, and that the strip was cold-rolled without any recrystallisation of the interlayer. Indeed, D5 disclosed a fully-annealed condition before brazing.
- (c) D11 mentioned neither a volume fraction of a texture component nor a cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer. Moreover, it disclosed carrying out soft annealing as often as required during cold rolling. The soft annealing might involve recrystallisation.
- (d) D29 mentioned neither a volume fraction of a texture component nor a cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer.

Main request - inventive step

XVIII. The Proprietor's arguments relating to the alleged lack of inventive step (Article 56 EPC) can be summarised as follows:

(a) The subject-matter of claim 14 differed from D4 in that it disclosed a step of pre-heating to 380-520°C so as to form dispersoid particles in the interlayer, in that it required a cold-rolling reduction of at least 90% after the last heat treatment causing recrystallisation of the interlayer, and in that it required a heat treatment of the cold-rolled strip to delivery temper.

The skilled person would not combine D4 with D14 because D14 did not concern a multilayer strip but a single-layer Al-Mn fin material which contained up to 4%, preferably 0.5-2.8%, Zn and optionally a braze clad. The skilled person would find no reason to use a single-layer fin material as an interlayer in a multilayer material according to D4. This reasoning also applied to the other claims on file.

(b) D2a was a non-enabling disclosure. The statements in paragraphs [0080]-[0081] were obviously contradicting the comparative examples 33 and 36 using alloys l and q, hence the skilled person would not consider D2a as belonging to the state of the art.

(c) The subject-matter of claim 14 differed from D2a in that it disclosed a step of pre-heating to 380-520°C so as to form dispersoid particles in the interlayer, and in that it required  $\leq 0.1\%$  Zn in the interlayer alloy whereas D2a required 1-4% Zn. D2a disclosed that if the Zn content was below 1% it was not possible to adequately achieve the effect of improving the corrosion resistance. The

skilled person would thus not replace the interlayer in D2a with an interlayer containing substantially less Zn than 1%, such as disclosed in D3, D4, D29, or in view of their general technical knowledge.

XIX. The proprietor requested that all the appeals be dismissed (main request), or alternatively that the patent be maintained based on one of auxiliary requests 1 to 5 filed on 21 April 2020.

XX. The opponents requested that the appealed decision be set aside and that the patent be revoked.

### **Reasons for the Decision**

#### *Admittance with regard to oral submissions, claim requests and documents*

##### 1. *Oral submissions by a person accompanying the representative of Opponent 4 - admittance*

In line with G 4/95, headnote 2(b)(iii), a request for an accompanying person to make oral submissions which is made at the oral proceedings should in the absence of exceptional circumstances be refused, unless each opposing party agrees to the making of the oral submissions requested.

Opponent 4 announced only at the beginning of the oral proceedings that an accompanying person was to make oral submissions, and did not invoke exceptional circumstances, nor are these apparent from the written submissions. The Proprietor explicitly did not agree to the accompanying person making oral submissions.

Therefore the request to make oral submissions is to be refused.

2. Main request (auxiliary request 2 in opposition proceedings) - admittance

It is not apparent that the Opposition Division wrongly exercised its discretion to admit the then-auxiliary request 2, now main request. The Opposition Division examined the *prima facie* relevance of the amendments and concluded that they overcame the lack of novelty over D2a.

According to the minutes, the then-auxiliary request 2 was submitted just before interruption of the proceedings on the evening of the first day (paragraphs 6.1.4 and 7). After resumption of the proceedings on the morning of the second day, the opponents were heard on the admissibility of auxiliary request 2 (paragraph 9). This was followed by deliberation, and admittance of the request (paragraph 9.1). The opponents agreed to discuss all issues with regard to auxiliary request 2 immediately, with the exception of the inventive-step attack, for the preparation of which they "may need time later" (paragraphs 9.2 and 10). When later in the second day the parties were asked to comment on inventive step (paragraph 12), the opponents did submit their attacks (paragraphs 12.1 to 12.3). When, after deliberation, they were informed that the Opposition Division found the subject-matter inventive, and were asked whether they had any other comments or requests, the opponents did not (paragraph 13). It is thus noted that the minutes do not report any request to grant time for a further search or any request for more preparation time when inventive step was



discussed, nor did the appellants challenge the content of the minutes. It therefore has to be concluded that the time available to the opponents to react to the newly-submitted request was sufficient.

Therefore, according to the evidence on file, the Board cannot establish wrongly-exercised discretion by the Opposition Division, and does not see any reason to disregard the present main request.

3. Document CD46 filed by Opponent 2 - admittance

Pursuant to Article 12(4) RPBA 2007, applicable in the present case according to Article 25 RPBA 2020, the Board has the power to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first-instance proceedings.

The question of measurement by means of EBSD had already been raised under Article 83 EPC in Opponent 2's notice of opposition. Already in the reply to the preliminary opinion annexed to the summons in the opposition proceedings, Opponent 2 submitted a remark relating to EBSD (paragraph bridging pages 5 and 6) expressing the opinion that XRD yielded statistically more-representative results than EBSD. However, no further substantiation of this allegation was provided at that time.

In view of the reaction by the Opposition Division, which in its preliminary opinion stated that the invention was sufficiently disclosed, Opponent 2 could and should have presented additional tests already in the reply to that summons, or should at least have announced its intention to do so if the time needed to

set up the specific program would have prevented it from presenting the results together with the reply.

In addition, Opponent 2 did not indicate in the oral proceedings before the Opposition Division that it was impossible to react immediately to the newly-filed auxiliary request 2 or that any further search or postponement of the proceedings was necessary (see above).

Document CD46 is thus not admitted into the proceedings (Article 12(4) RPBA 2007).

4. Documents D46 to D48 filed by Opponent 4 - admittance

Pursuant to Article 25 RPBA 2020, Article 12(4) RPBA 2007 applies to these documents, first submitted with the statement of grounds of appeal.

The decisions cited by the appellants in fact emphasize the Board's discretionary powers under this provision (see e.g. T 0406/09, reasons 2.1.2; T 1817/15, reasons 2.1.1; T 0828/14, reasons 1.2; T 0241/10, reasons 2; T 1146/06, reasons 4.1; and T 0295/08, reasons 2.2). In all these decisions the *case-specific* situation was analysed and the *case-specific* conclusions adapted to the particular circumstances were drawn (see e.g. T 0406/09, reasons 2.1.3: "Having regard to the *present factual situation*, the Appellant was entitled to file those new documents...."; T 0828/14, reasons 1.3: "*Im vorliegenden Fall* ist diesbezüglich zu berücksichtigen ..." (translation by the Board: "*In the present case* it has to be taken into account in this respect..."; (emphasis added by the Board)).

The same approach of first analysing the case-specific situation and then drawing case-specific conclusions is applied by this Board.

In the present case, it is undisputed that the restriction to  $Zn \leq 0.1\%$  in auxiliary request 2 was filed only during the oral proceedings in opposition. This restriction represents the most preferred range for Zn, which was already contained in claim 1 as originally filed and as granted.

Opponent 4 considered this amendment unforeseeable, particularly in view of the number of possible permutations represented by the alternatives contained in the subject-matter of claim 1.

All the interlayers according to the examples in the patent in suit show a Zn content of less than 0.1%. Also, all the claims filed on 9 October 2018 already contained a restriction of the Zn content to a more preferred range. No content of any other element was restricted. Therefore a further restriction of the Zn content could and should have been expected.

As mentioned above with respect to the admissibility of the then-auxiliary request 2, no request for adjournment of the oral proceedings was made: according to the minutes, the opposing parties were in a position to react to the amended auxiliary request 2 immediately (paragraphs 9.2 and 10). No justification was given as to why they changed their minds in the appeal proceedings.

For these reasons, the Board decides not to admit documents D46 to D48 into the proceedings (Article 12(4) RPBA 2007).

5. Request under Article 112(1)(a) EPC

According to Article 112(1)(a) EPC, a board shall, either of its own motion or following a request from a party to the appeal, refer any question to the Enlarged Board of Appeal if it considers that a decision is required in order to ensure uniform application of the law, or if a point of law of fundamental importance arises.

In reaction to the Board's preliminary view not to admit D46 to D48 into the proceedings, Opponent 2 made such a request under Article 112(1)(a) EPC.

However, as outlined above, Article 12(4) RPBA 2007 gives the Board discretionary power not to admit documents which could have been submitted in first-instance proceedings. As laid down in the reasoning above, the Board considers the case at issue such that documents D46 to D48 (and CD46) could and should already have been submitted in the opposition proceedings.

Also the alleged multitude of possible amendments, which was allegedly not foreseeable, cannot be considered as sufficient justification for referring the question of whether a further search was justified to the Board, in particular since the parties neither requested adjournment or a further break in the first-instance proceedings, nor objected to the minutes.

Thus, as the present case raises neither a point of law of fundamental importance nor any doubts as to the

uniform application of the law, the request under Article 112(1)(a) EPC is rejected.

6. Main request - sufficiency of disclosure

The appellants argued that the claimed invention was insufficiently disclosed. The Board does not share this view.

6.1 There is no proof provided by the appellants that textures other than the exemplified P-texture could not be achieved: in particular, there are no tests showing that the desired texture cannot be obtained. Nor is there even any reference to scientific considerations as to why the description is not sufficient in this respect. The examples contained in the patent in suit demonstrate the purported effect. It is not apparent that the additional hot-rolling step contained in the subject-matter of claim 14 would reduce that effect or make it disappear. It is therefore not convincing that the description or the example contained in the patent in suit fails to provide enough guidance.

6.2 The Board is not convinced that the feature "*volume fraction of a texture component*" is an unusual parameter at all, and even less that it is so unusual that it prevents the skilled person from carrying out the invention.

D15, a textbook, Fig. 10.5 reproduces a figure of a publication from 1978, which shows volume fractions of texture components. Volume fractions of the cube orientation are also published in D32, Fig. 1. This supports the view that the "*volume fraction of a texture component*" is not an unusual parameter.

Even if it was an unusual parameter, it obviously did not prevent the skilled person from carrying out the invention. Indeed, Opponent 2 provided a number of tests (see D16 and D39) where the person preparing the tests did not have any apparent problem in determining the volume fraction of the texture components.

6.3 There is no doubt that EBSD and XRD are both suitable and used for crystallographic measurements of the kind in question. Opponent 2 argued in its statement of grounds of appeal that the EBSD and XRD methods would produce comparable results. Obviously even without an industrial standard for carrying out an EBSD measurement the test samples for the tests carried out by Opponent 2 were suitably prepared and the measurement parameters, such as the allowable misorientation, were obviously chosen appropriately. The allegation that EBSD could not be used in the present case is therefore not convincing, and would have to be supported by evidence beyond some failed measurements in the opponent's own laboratory.

6.4 It is acknowledged that the sample preparation may possibly be challenging and the identification of the interlayer may be difficult with XRD, particularly if the Mn content is the same in the interlayer and the core.

However, the mere fact that a measurement method is complicated and that in the special case of an equal Mn content an XRD measurement is even very difficult or impossible to carry out does not mean that the invention as a whole is insufficiently disclosed. It would simply raise doubts as to whether certain very specific embodiments fall within the claimed area or

not. This is however a topic not relating to Article 83 EPC. Moreover, EBSD could be used if an equal Mn content in the core and the interlayer rendered an XRD measurement very difficult or even impossible.

- 6.5 Whether the EBSD or the XRD measurement is statistically more representative is not decisive either.  
Even if EBSD yielded measurement results which were scattered within a broader range, XRD and EBSD yield comparable measurement results, as argued by Opponent 2. Therefore it would at most raise doubts as to whether certain embodiments at the boundary of the scope of protection fall within the forbidden area or not. This is however a topic not relating to Article 83 EPC, but rather to Article 84 EPC.
- 6.6 The concept of passive corrosion protection is a measure well-known in the art and can be easily tested. There are a number of documents on file indicating the impact of the addition of a specific element on the corrosion potential of an aluminium alloy (see e.g. D2a). The Board has no doubt that the skilled person is in a position to add elements to the core and the interlayer such that the core is more noble than the interlayer: at least, no convincing proof has been submitted that this is not the case.
- 6.7 The subject-matter of claim 13 does indeed not define the representative size to be used for the grain size. However, there is no indication that this would have any impact beyond some uncertainty as to whether certain embodiments at the boundary of the scope of claim 13 fall within the forbidden area or not. This however is again a topic not relating to Article 83 EPC.

7. Main request - novelty

7.1 *New line of attack based on D13 - admittance*

In the appeal proceedings, Opponent 1 did not attack novelty on the basis of D13 prior to the Board's communication in preparation for the oral proceedings. Therein the Board did not provide an interpretation of the subject-matter of claims 1 and 14 which was different from the Opposition Division's interpretation of the claims. The new line of attack is thus an amendment to Opponent 1's appeal case which, according to Article 13(2) RPBA 2020, shall in principle not be taken into account unless there are exceptional circumstances which have been justified by cogent reasons. In the present case Opponent 1 did not refer to any such circumstances or reasons. Thus the new line of attack should have been submitted earlier and is therefore not admitted into the proceedings (Article 13(2) RPBA 2020).

7.2 Furthermore, the appellants challenge novelty of the subject-matter of claims 1, 14 and 26 on the basis of the following documents:

Claim 1: D4, D5, D11, D29

Claim 14: D4, D11, D29

Claim 26: D4, D11, D29

*Novelty vis-à-vis D4*

7.3 Document D4 does not disclose a cold-rolling height reduction of 90% or more after the last heat treatment causing recrystallisation. Document D4 discloses an intermediate heat treatment of 380°C for 2 hours which raises the question of whether or not this causes



recrystallisation of the interlayer. Since the appellants raise an objection to novelty of the subject-matter of claim 14 on the basis of D4, the burden of proof lies with them.

- 7.4 The mere fact that the holding temperature and the holding time disclosed in D4 are contained within the temperature range and holding-time range disclosed in the patent in suit does not anticipate the functional feature according to which recrystallisation must not take place during the heat treatment. This functional feature can be achieved by suitably selecting the holding temperature and holding time. Whether or not a heat treatment causes recrystallisation is specific to the material and its thermomechanical history.

There is, however, no evidence on file showing that the heat treatment of the specific interlayer disclosed in D4 would not cause recrystallisation.

- 7.5 D4 does not disclose any teaching relating to the volume fraction of a texture component, as defined in claim 1 of the patent in suit, either. Since at least the steps of a cold-rolling height reduction of 90% or more after the last heat treatment causing recrystallisation and pre-heating so as to create dispersoid particles are critical for achieving that feature, the Board can only conclude that the presence of a volume fraction of a texture component in the interlayer is not implicitly contained in D4 either. Again, no proof to the contrary was provided.

- 7.6 Therefore the subject-matter of claims 1 and 14 is novel over document D4.

*Novelty vis-à-vis D5*

7.7 Document D5 does not disclose any teaching relating to the volume fraction of a texture component. Moreover, it does not disclose a cold-rolling height reduction of 90% or more after the last heat treatment causing recrystallisation of the interlayer. These features could not be found in examples A, M, N and O (para. [0041] together with Tables 2 and 3), which Opponent 4 refers to, either. Moreover, it does not disclose a final heat treatment such that the interlayer is softened without recrystallisation. Rather, D5 discloses a fully-annealed condition.

*Novelty vis-à-vis D11*

7.8 Document D11 neither contains any teaching relating to the volume fraction of a texture component nor discloses a cold-rolling height reduction of 90% or more after the last heat treatment causing recrystallisation of the interlayer. Indeed, the soft annealing steps may or may not involve a recrystallisation.

*Novelty vis-à-vis D29*

7.9 Document D29 neither contains any teaching relating to the volume fraction of a texture component nor discloses a cold-rolling height reduction of 90% or more after the last heat treatment causing recrystallisation of the interlayer. Indeed, no rolling reduction can be deduced from the examples of D29.

7.10 Even if the volume fraction of a texture component was an unusual parameter, the burden of proving lack of novelty was upon the appellants because that feature

was already present in the patent as granted.

7.11 Since documents D4, D11 and D29 do not anticipate the subject-matter of claim 1, the subject-matter of claim 26, relating to the use of a strip according to claim 1, and all claims depending on these claims is necessarily novel.

7.12 The requirements of Article 54(1) and (2) EPC are thus met.

Main request - inventive step

8. The appellants challenge the presence of an inventive step in the subject-matter of claims 1, 14 and 26 on the basis of the following combinations:

starting from D4 in view of D14,  
starting from D2a in view of D3,  
starting from D2a in view of D4,  
starting from D2a in view of D29,  
starting from D2a in view of the general technical knowledge.

8.1 The patent is directed to an aluminium strip for brazing, comprising a core and an interlayer for providing excellent corrosion resistance, strength, formability and brazing performance (para. [0013]-[0015]), and to the manufacture thereof.

8.2 Document D2a describes an aluminium strip for brazing, comprising a core, an interlayer on one side of the core and a braze clad over the whole of both sides, for providing excellent corrosion resistance, strength, formability and brazing properties (section '*Problem*'), and the manufacture thereof.

8.3 Document D4 describes an aluminium strip for brazing, comprising a core, an interlayer on one side of the core, a sacrificial anode layer over the other side of the core and a braze clad over the interlayer, for providing excellent corrosion resistance, strength and brazing properties (para. [0011] and [0014]), and the manufacture thereof.

Both documents potentially qualify as a suitable starting point for challenging the inventive step.

8.4 Independent claim 14

8.4.1 The subject-matter of claim 14 differs from document D4 (example B1) in three aspects:

1. Cold rolling according to claim 14 is carried out such that a reduction of 90% or more is achieved after the last recrystallisation step of the interlayer, whereas in D4 intermediate annealing is carried out in the midway of cold rolling, and may or may not cause recrystallisation (para. [0059])

2. The cold-rolled strip according to claim 14 is heat-treated to delivery temper in order to soften without recrystallising the interlayer, while paragraph [0059] of D4 discloses intermediate annealing with a final cold-rolling step with a reduction ratio of 15% to obtain an H-tempered sheet. While this intermediate annealing may be considered to provide the delivery temper, D4 does not disclose that this intermediate annealing would not cause recrystallisation.

3. The interlayer according to claim 14 is preheated to 380-520°C prior to hot rolling so as to form dispersoid particles in the interlayer, whereas D4 discloses a

homogenisation treatment (para. [0059]) which, according to all the examples, is carried out at 600°C, or preheating to a hot-rolling temperature of 500°C (see examples).

8.4.2 The subject-matter of claim 14 differs from document D2a (example 23) in that

1. the amount of zinc according to claim 14 is restricted to  $\leq 0.1\%$ , whereas D2a, example 23 discloses 2% and generally teaches a zinc content from 1% to 4% (para. [0036]).

2. the interlayer according to claim 14 is preheated to 380-520°C prior to hot rolling so as to form dispersoid particles in the interlayer, whereas D2a discloses hot rolling at 460°C (page 24, line 16). However, in analogy with D4, the heating to hot-rolling temperature cannot be considered as preheating with the purpose to form dispersed particles.

Thus, since D2a is distinguished from the subject-matter of claim 14 in terms of number of differences less than D4, D2a is considered to be the closest prior art.

8.4.3 The Proprietor argued that D2a was not an enabling disclosure. The skilled person would however immediately have recognised that some comparison examples contained an error. The correction is immediately apparent by analysing D2a, so the skilled person would not have disregarded document D2a.

8.4.4 The Proprietor sees the problem to be solved as being to provide an aluminium strip having excellent

corrosion resistance after brazing.

- 8.4.5 According to the Proprietor, this problem is solved by limiting the zinc content and by carrying out a heat treatment so as to form dispersoid particles.
- 8.4.6 With respect to the zinc content, the patent in suit, para. [0051], discloses that Zn may be added to decrease the corrosion potential of the interlayer, thereby providing the core material with the cathodic protection. A reduction in the Zn content would thus decrease the cathodic protection of the core material, which is not consistent with the problem stated by the Proprietor. Therefore this effect cannot be taken into account when assessing the presence of an inventive step.
- 8.4.7 According to the Proprietor, the high resistance to liquid core penetration in the claimed corrosion resistant strip was partly a result of the diffusion of silicon from the braze clad into the interlayer during brazing or final temper annealing. Silicon diffused into the interlayer and combined with manganese so as to form small particles of an intermetallic compound.

However, this argument is unrelated to the pre-heating step. Moreover, according to the subject-matter of claim 14, the interlayer is merely adapted to be located between the core and an Al-Si based clad whereby only the interlayer and the core are compulsory elements of the strip. The Al-Si based clad is thus only optionally present upon brazing.

Therefore this effect cannot be taken into account either when assessing the presence of an inventive

step.

- 8.4.8 Nevertheless, para. [0045] of the patent in suit suggests that manganese, the only compulsory alloying component, already forms the required number of dispersoid particles to control the grain structure to reduce the sensitivity to liquid core penetration.

No combined effect of the two differences is apparent.

The first difference does not solve the problem stated by the applicant, while the second difference does. Since D2a already discloses an aluminium strip which is corrosion-resistant after brazing (D2a, para. [0007], [0016], [0036]), it already solves the problem stated by the Proprietor.

- 8.4.9 Therefore the problem to be solved must be reformulated to providing an alternative method.

- 8.4.10 It remains to be assessed whether the claimed alternative method according to the subject-matter of claim 14 involves an inventive step.

- 8.4.11 As to the zinc content in the interlayer, D2a, para. [0036] discloses that the zinc content in the interlayer should be contained within the range of 1% to 4% so as to provide the core with sacrificial corrosion protection (see para. [0025]).

- 8.4.12 *Inventive step starting from D2a in view of D3*

Document D3 is directed to an aluminium strip with a waterside clad (page 2, penultimate para.). The composition of the clad contains many components which fall within the claimed range (page 3, 3rd para.).

However, the most-preferred zinc content according to D3 is 0.4 wt% or less, the magnesium content is entirely above the range claimed and the silicon content has only a minor overlap as well. D3 discloses that upon lowering the silicon or zinc content the clad (undesirably) became more noble. D3 states that the disadvantage of zinc is that it may diffuse into the core, which worsens its corrosion resistance. The corrosion resistance is improved by increasing the manganese content (page 4, lines 13-15).

Document D3 thus discusses the impact different elements have on the corrosion properties of an aluminium strip. The skilled person would not have had any motivation to select zinc from amongst those elements, to reduce its content to  $\leq 0.1$  wt%, i.e. significantly below the lowest upper limit of 0.4 wt% disclosed in D3, but to ignore the teaching in D3 as to the magnesium content, and to implement the result in example 23 of D2a. It is emphasised that a zinc content of  $\leq 0.1$  wt% is far outside the range disclosed in D2a and thus does not provide the key effect taught in D2a.

#### 8.4.13 *Inventive step starting from D2a in view of D4*

Document D4 discloses an aluminium strip with a core, an interlayer and a sacrificial anode. The sacrificial anode may contain between 1% and 6% zinc (see D4, claim 1). This range has a large overlap with the zinc content of the interlayer disclosed in document D2a, because in D2a the interlayer also acts as a sacrificial anode.

When starting from D2a, the skilled person would thus not have been prompted by D4 to provide an interlayer without zinc since this would mean jeopardising the



core effect attributed to Zn in both documents, which is to provide a sacrificial anode.

8.4.14 *Inventive step starting from D2a in view of D29*

In document D29, Table 3, interlayer 1 discloses an alloy which falls within the definition of the alloy for the interlayer of the subject-matter of claim 1. In col. 10, lines 38-41, document D29 discloses that the corrosion resistance of an interlayer comprising zinc is superior to an interlayer not comprising zinc. The interlayer according to the subject-matter of claim 1 does indeed comprise zinc within the range of 0.5 wt% to 2.5 wt%.

The mere fact that D29 also discloses an interlayer having the claimed composition would thus not have prompted the skilled person to combine this disclosure with D2a. Indeed, document D29 rather confirms the key teaching of D2a, which is to add a certain amount of zinc to the interlayer so as to provide cathodic corrosion protection.

8.4.15 *Inventive step starting from D2a in view of the general technical knowledge*

When starting from D2a alone, in view of the skilled person's general knowledge, no motivation which might have prompted the skilled person to consider alloys with a Zn content significantly below the lower limit disclosed as being essential in D2a is apparent.

The fact that the problem to be solved is to provide an alternative alloy does not mean that the skilled person, starting from D2a, would have considered any

arbitrary modification.

- 8.5 Concerning the second difference, no indication is disclosed either in D2a or in any of D3, D4 and D29 which could, let alone would, have prompted the skilled person to carry out preheating so as to form dispersoid particles in the interlayer. Only D4 elaborates on a preheating step so as to form dispersoid particles. However, the purpose in D4 is to provide resistance to recrystallisation of the core to ensure that the core does not undergo recrystallisation at filler melting temperature (D4, para. [0027]).

The subject-matter of claim 14 is thus not rendered obvious to the skilled person when starting from D2a.

- 8.6 Independent claim 1

- 8.6.1 Since the subject-matter of method claim 14 is not rendered obvious to the skilled person, the product according to the subject-matter of claim 1 is not rendered obvious in so far as it is seen as a direct result of the method according to claim 14.

- 8.6.2 Even when assessing the subject-matter of claim 1 independently from claim 14, it is not rendered obvious to the skilled person.

For the same reasons as for the subject-matter of claim 14, document D2a qualifies as closest prior art for the subject-matter of claim 1.

- 8.6.3 The subject-matter of claim 1 differs from D2a in that the zinc content according to claim 1 is  $\leq 0.1$  wt%, whereas D2a, example 23 (alloy j) discloses 2 wt%. It further differs in the volume fraction of a texture

component in claiming at least 30%, whereas D2a does not disclose anything relating to the texture.

In line with the considerations above, the zinc content already is not rendered obvious to the skilled person.

Moreover, none of the documents cited in the attacks under Article 56 EPC discloses anything about the volume fraction of a texture component. Therefore the subject-matter of claim 1 is not rendered obvious to the skilled person.

#### 8.7 *Inventive step starting from D4 in view of D14*

Even when starting from the more remote document D4 in view of D14, the subject-matter of claim 14 is not rendered obvious to the skilled person.

D4 is directed to a multilayer strip, while D14 is directed to the improvement of a strip which may be clad. D14 thus discloses an improvement of a single-layer strip or, if the strip is clad, an improvement of the core of a multilayer strip.

The skilled person however, starting from D4, would have no motivation to use the alloy of a single layer strip according to D14 or, if the strip according to D14 is clad, the alloy of the core, to replace the interlayer of the multilayer strip disclosed in D2a.

Therefore the subject-matter of claim 14 is not rendered obvious starting from D4 in view of D14.

Neither D4 nor D14 contains any teaching relating to the texture of the interlayer.

Therefore the subject-matter of claim 1 is not rendered obvious to the skilled person.

8.8 Independent claim 26

Since the subject-matter of claim 26 is directed to the use of a strip according to the subject-matter of claim 1, it is necessarily not rendered obvious to the skilled person.

8.9 Similar considerations apply *mutatis mutandis* to the dependent claims.

**Order**

**For these reasons it is decided that:**

The appeals are dismissed.

The Registrar:

The Chair:



D. Grundner

E. Bendl

Decision electronically authenticated