

**Internal distribution code:**

- (A) [ - ] Publication in OJ
- (B) [ - ] To Chairmen and Members
- (C) [ - ] To Chairmen
- (D) [ X ] No distribution

**Datasheet for the decision  
of 1 December 2021**

**Case Number:** T 0436/19 - 3.3.05

**Application Number:** 13003172.7

**Publication Number:** 2695959

**IPC:** C22C21/06, C22F1/047

**Language of the proceedings:** EN

**Title of invention:**

Method for the Production of an Aluminum Alloy Sheet that Exhibits Excellent Surface Quality After Anodizing

**Patent Proprietor:**

UACJ Corporation

**Opponent:**

C-Tec Constellium Technology Center /  
Constellium Rolled Products Singen GmbH

**Headword:**

Anodized aluminium alloy sheet/UACJ CORP.

**Relevant legal provisions:**

EPC Art. 123(2), 123(3), 83, 56  
RPBA 2020 Art. 13(2)

**Keyword:**

Amendments - extension beyond the content of the application as filed (yes) - main request; - added subject-matter (no) - auxiliary request

Amendment after summons - cogent reasons (yes) - auxiliary request

Sufficiency of disclosure - auxiliary request (yes)

Inventive step - non-obvious modification - auxiliary request

**Decisions cited:**

G 0003/99, T 1018/02, T 1408/04, T 0197/10, T 1127/16

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 0436/19 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 1 December 2021**

**Appellant:**

(Opponent)

C-Tec Constellium Technology Center /  
Constellium Rolled Products Singen GmbH  
CS10027 - Propriété Industrielle  
725, rue Aristide Bergès  
Alusingen-Platz 1  
38341 Voreppe / 78224 Singen (FR)

**Representative:**

C-TEC Constellium Technology Center  
Constellium Propriété Industrielle  
725, rue Aristide Berges  
Boîte Postale CS 10027  
38341 Voreppe (FR)

**Respondent:**

(Patent Proprietor)

UACJ Corporation  
1-7-2, Otemachi  
Chiyoda-ku  
Tokyo 100-0004 (JP)

**Representative:**

Flaccus, Rolf-Dieter  
Flaccus · Müller-Wolff  
Patentanwälte  
Bussardweg 10  
50389 Wesseling (DE)

**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 19 December  
2018 rejecting the opposition filed against  
European patent No. 2695959 pursuant to Article  
101(2) EPC.**

**Composition of the Board:**

**Chairman**            E. Bendl  
**Members:**            S. Besselmann  
                          P. Guntz

## Summary of Facts and Submissions

- I. The joint opponents' (appellant's) appeal in this case lies from the opposition division's decision to reject the opposition against European patent EP 2 695 959 B1. The patent in suit concerns a method for the production of an aluminium alloy sheet that exhibits excellent surface quality after anodising.
- II. The decision under appeal referred *inter alia* to the following documents:
- D1/D1a JP S58-011769 (22 January 1983) and its translation
  - D2/D2a JP 2009-209426 A (17 September 2009) and its translation
  - D3 EP 2 862 952 A1 (22 April 2015)
  - D6 Aluminium - Properties and Physical Metallurgy, ASM, Editor: Hatch J. E., 1984, page 95
- III. The opposition division decided that the granted patent did not extend beyond the content of the application as originally filed. Specifically, it found that the granted claim indicated a difference in the Mg concentration between adjacent bands of 0.05 mass% in the unanodised sheet, but this had to be construed as applying to the anodised sheet in view of the description. The opposition division furthermore concluded that the objection of insufficiency of disclosure was unfounded. The claim was novel and involved an inventive step starting from D1 or D2 as the closest prior art.

- IV. In the grounds of appeal, the joint opponents (appellant) disagreed with the opposition division's interpretation of the claim. They argued that the granted patent extended beyond the scope of the application as originally filed, and that the claimed invention was insufficiently disclosed and lacked inventive step starting from D1 or alternatively D2.
- V. The patent proprietor (respondent), in their reply to the appeal, raised doubts regarding the admissibility of the appeal. They defended the patent as granted and filed an auxiliary request. In reply to the board's preliminary opinion, they submitted a further auxiliary request (2 November 2021), now the second auxiliary request, and re-submitted the former auxiliary request as the first auxiliary request. During the oral proceedings on 1 December 2021, they withdrew the first auxiliary request.
- VI. The appellant withdrew their request for oral proceedings (submissions of 6 September 2021). They did not attend the oral proceedings, as indicated in the aforementioned submissions and additionally in the letter dated 23 November 2021.
- VII. The sole claim of the granted patent reads:  
*"A method for producing an aluminum alloy sheet that exhibits excellent surface quality after anodizing, the aluminum alloy sheet being a 5000 series aluminum alloy sheet that comprises 1.0 to 6.0 mass% of Mg, and and [sic] one or two or more elements selected from the group consisting of 0.001 to 0.1 mass% of Ti, 0.4 mass% or less of Cr, 0.5 mass% or less of Cu, 0.5 mass% or less of Mn, 0.4 mass% or less of Fe, and 0.3 mass% or less of Si, with the balance being Al and unavoidable impurities, and that aluminum alloy sheet requires an*

*anodic oxide coating, a concentration of Mg in a solid-solution state that is present in an outermost surface area of the aluminum alloy sheet varying in a widthwise direction of the aluminum alloy sheet in a form of a band having a width of 0.05 mm or more, and a difference in the concentration of Mg between adjacent bands being 0.05 mass% or less, the method comprising subjecting an ingot to hot rolling and cold rolling to produce an aluminum alloy sheet, a rolling target side of the ingot having a structure in which a difference in concentration of Mg between an area having a diameter of 5  $\mu\text{m}$  and positioned in a center area of a crystal grain and an area having a diameter of 5  $\mu\text{m}$  and positioned away from a grain boundary of the crystal grain by 2.5  $\mu\text{m}$  is 0.80 mass % or less, wherein said ingot of an aluminum alloy is produced by casting and homogenizing aluminum molten metal having a composition as defined above, and wherein homogenization is performed at a temperature equal to or higher than a temperature less than "solidus temperature-50°C" for more than 3 hours, and applying electron beams using an EPMA in an area of the ingot having a diameter of 5  $\mu\text{m}$  and positioned in the center area of a crystal grain and an area having a diameter of 5  $\mu\text{m}$  and positioned away from the grain boundary of the crystal grain by 2.5  $\mu\text{m}$  to determine the difference in the concentration of Mg from fluorescent X-rays that are generated by the electron beams and selecting the ingot for the production of the aluminum alloy sheet that is to be anodized when the difference in the concentration of Mg is 0.80% or less."*

The claim in accordance with the auxiliary request, submitted as the second auxiliary request on

2 November 2021, differs from the granted claim in that the part between "and that aluminum alloy sheet requires an anodic oxide coating," and "the method comprising" has been amended to read:

*"a concentration of Mg in a solid-solution state that is present in an outermost surface area of the aluminum alloy sheet varying in a widthwise direction of the unanodized aluminum alloy sheet in a form of a band having a width of 0.05 mm or more, and a difference in the concentration of Mg between adjacent bands being 0.20 mass% or less, and a concentration of Mg in a solid-solution state that is present in an outermost surface area of the aluminum alloy sheet after the anodizing varying in a widthwise direction of the aluminum alloy sheet in a form of a band having a width of 0.05 mm or more, and a difference in the concentration of Mg between adjacent bands being 0.05 mass% or less,".*

VIII. The appellant's arguments, where relevant to the present decision, can be summarised as follows:

The granted claim extended beyond the content of the application as originally filed because it related the difference in Mg concentration of 0.05 mass% or less to the sheet that required an anodic oxide coating, i.e. the unanodised sheet. The description should not be consulted to interpret the claim because the wording of the claim was clear and unambiguous.

Moreover, the selection step defined in the last paragraph of the granted claim had not been disclosed in the application as originally filed. The alleged basis for this feature (first full paragraph on page 6) was not a selection step, and furthermore related to a specific embodiment in which the ingot was produced



using a semicontinuous casting method, and in which the crystal grains formed during casting had the specified average grain size.

The invention had not been sufficiently disclosed because it was not known how a difference in Mg concentration of 0.05 mass% or less could be obtained in the unanodised sheet. Moreover, some information as to how the desired surface quality could be obtained had to be missing, because documents D1 and D3 disclosed examples which presented a streak pattern after anodising even though homogenising was performed at a temperature within the claimed range. In addition, there was no teaching as to how the method could be modified if an ingot did not meet the criteria regarding the difference in Mg concentration, so the skilled person was faced with an undue burden. The measuring method using electron probe microanalysis (EPMA) was also insufficiently described.

None of D1-D3 disclosed the measuring step using EPMA to select the ingot. Novelty was not contested.

Starting from D1 as the closest prior art, the objective technical problem was merely the provision of an alternative. The excellent surface quality after anodising was already obtained in D1, and was due to the homogenising temperature. The claimed measuring step using EPMA was therefore useless. Microanalysis methods being known, for instance from D6, the claimed method thus lacked inventive step. Alternatively, document D2 could be seen as the closest prior art. This led to the same formulation of the objective technical problem and to the same considerations being applied.

Regarding the second auxiliary request, it was argued that it contravened Article 123(2) EPC in view of the feature relating to the Mg concentration of the unanodised sheet.

IX. The respondent's arguments, where relevant to the present decision, can be summarised as follows:

It was unclear whether "Constellium Rolled Products Singen GmbH & Co. KG", one of the joint opponents, had acquired the status of an appellant, raising doubts as to the identity of the appellant and thus the admissibility of the appeal.

The granted claim had to be interpreted on the basis of the description. It was therefore clear that the difference in Mg concentration of 0.05 mass% or less was that of the anodised sheet. Moreover, this low difference in Mg concentration after anodising was linked to a low difference in Mg concentration of 0.20 mass% or less prior to anodising, and to the claimed low difference in Mg concentration of the ingot, as could be taken from the examples. It was therefore not necessary additionally to specify the difference in Mg concentration of 0.20 mass% or less prior to anodising, this being inherent in the claim. The granted claim did not extend beyond the content of the application as originally filed.

The request filed as the second auxiliary request should be admitted into the proceedings because it addressed a fresh objection, so exceptional circumstances should be recognised.

- X. The appellant (joint opponents) requested that the decision under appeal be set aside and that the European patent be revoked.
  
- XI. The respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the patent be maintained in amended form based on the claims submitted as the second auxiliary request with the letter dated 2 November 2021.

## **Reasons for the Decision**

- 2. Admissibility of the appeal
  - 2.1 The notice of appeal was filed in the name of two companies, namely 1) C-Tec Constellium Technology Center and 2) Constellium Rolled Products Singen GmbH & Co. KG, whereas the statement of grounds of appeal was filed in the name of 1) C-Tec Constellium Technology Center only.
  
  - 2.2 In this case, the appeal was filed in the name of the two companies that acted jointly as joint opponents. Joint opponents (joint appellants) are required to act through a common representative (Rule 151(1) EPC and G 3/99, Headnote 2.). Moreover, only one appeal fee is to be paid (G 3/99, Reasons 17). The statement of grounds of appeal was filed by the common representative. There is no reason to assume that the representative when filing the statement of grounds of appeal intended to represent only one of the joint appellants. The mere fact that the statement of grounds of appeal - as the notice of appeal - is written on the

letterhead of C-Tec Constellium Technology Center is no indication in that regard.

- 2.3 There are therefore no doubts as to the identity of the appellant (here: joint appellants 1) C-Tec Constellium Technology Center and 2) Constellium Rolled Products Singen GmbH & Co. KG). The appeal is admissible.

**Main request (patent as granted)**

3. Article 100(c) EPC

3.1 The granted claim relates to a method for producing an aluminium alloy sheet that exhibits excellent surface quality after anodising. The claim stipulates "*a concentration of Mg in a solid-solution state that is present in an outermost surface area of the aluminum alloy sheet varying in a widthwise direction of the aluminum alloy sheet in a form of a band having a width of 0.05 mm or more, and a difference in the concentration of Mg between adjacent bands being 0.05 mass% or less*".

3.2 As set out in the impugned decision, the patent in suit describes three separate stages at which a Mg concentration difference is measured, namely the ingot, the unanodised sheet and the anodised sheet (paragraphs [0007], [0011], [0012], [0034]).

3.3 The claim does not expressly specify whether the feature relating to the difference in Mg concentration between adjacent bands relates to the unanodised or the anodised sheet. Taking the claim alone, both interpretations are therefore possible. However, in either case, the granted claim extends beyond the

content of the application as originally filed, as set out below.

- 3.3.1 According to one possible interpretation, the difference in Mg concentration is that of the unanodised sheet. It was not in dispute that the application as originally filed did not specifically disclose a range of 0.05 mass% or less in relation to the unanodised sheet.
- 3.3.2 The difference in the Mg concentration between adjacent bands of 0.05 mass% or less may alternatively be understood to be that of the anodised sheet, this understanding being in line with the originally disclosed range for that stage of the process, and also with the description of the granted patent (paragraphs [0012], [0033]).

However, a method in which the difference in the Mg concentration of the anodised sheet is within the claimed range of 0.05 mass% or less while the difference in the Mg concentration prior to anodising is undefined does not derive directly and unambiguously from the application as originally filed.

It was an essential feature of the originally disclosed method that the unanodised aluminium alloy sheet showed a difference in the Mg concentration between adjacent bands of 0.20 mass% or less (original claim 3 in conjunction with claim 1; page 2, lines 6-13 and 18-24). In particular, a difference in the Mg concentration of the anodised sheet of 0.05 mass% or less was consistently disclosed in conjunction with a difference in the Mg concentration of the unanodised sheet of 0.20 mass% or less (page 3, lines 3-20; page 8, line 24 - page 9, line 17).

There is no evidence that a difference in the Mg concentration of the unanodised sheet of 0.20 mass% or less is the inherent result of using an ingot as defined in the claim, irrespective of the chosen alloy composition and the chosen process conditions of the hot rolling and cold rolling steps, e.g. the temperature and the thickness reduction. Nor is there any evidence that a difference in the Mg concentration of 0.05 mass% or less in the anodic oxide coating implies that the difference was necessarily 0.20 mass% or less prior to anodising, irrespective of the nature of the anodising step and for instance the resulting thickness of the oxide coating.

That the invention examples comply with the requirements as to the difference in the Mg concentrations in all three stages of the process, while the comparative examples do not (Tables 2 and 3), does not prove that this finding is independent of the chosen process conditions. In all these invention and comparative examples, the homogenised ingot was subjected to the same hot rolling and cold rolling conditions, and also to the same anodising treatment.

Thus there is no basis for concluding that the feature that the difference in the Mg concentration is 0.20 mass% or less prior to anodising is inherent in the granted claim.

- 3.4 In the light of the above, the ground for opposition pursuant to Article 100(c) EPC prejudices maintenance of the patent as granted.

**Auxiliary request (filed as second auxiliary request)**

4. Article 13(2) RPBA 2020

4.1 The second auxiliary request was filed after the summons to oral proceedings had been issued on 24 February 2021.

This request was filed to address an objection under Article 123(2) EPC first raised by the board in the communication pursuant to Article 15(1) RPBA 2020, which concerned the claims of the - now withdrawn - auxiliary request filed with the reply to the appeal. As set out below, the amendment brings the claim into conformity with Article 123(2) EPC.

Hence the circumstances of the case constitute exceptional circumstances within the meaning of Article 13(2) RPBA 2020. The request is therefore taken into consideration.

5. Article 123(2) EPC

5.1 The claim now additionally defines the difference in the Mg concentration between adjacent bands of 0.20 mass% or less in the outermost surface area of the unanodised aluminium alloy sheet. It is furthermore clarified that the difference in the Mg concentration between adjacent bands of 0.05 mass% or less relates to the aluminium alloy sheet after the anodising. These are the ranges disclosed in the application as originally filed in relation to the unanodised sheet and the anodised sheet, respectively (page 3, lines 3-20). The objection set out with regard to the main request (point 3.) is thus overcome.

5.2 A further objection raised by the appellant concerned the selection step defined in the last paragraph of the granted claim. Even though the objection was not formally raised against the claim at issue, it is taken into consideration because the wording of this step remained the same.

This objection, however, is not convincing. The sentence "*When the difference in the concentration of Mg is 0.80% or less, an aluminum alloy sheet that is to be anodised is produced using the ingot*" (page 6, lines 11-13 of the application as originally filed) implies a selection. Furthermore, it may be derived from the original claim 3 that this feature is not inextricably linked to semicontinuous casting or to the formation of crystal grains having a specific average grain size.

5.3 In conclusion, the requirements of Article 123(2) EPC are met.

6. Article 123(3) EPC

6.1 The claim now specifies that the difference in the Mg concentration between adjacent bands of 0.05 mass% or less relates to the aluminium alloy sheet after anodising. This implies that a greater Mg concentration difference (of up to 0.20 mass%) is possible for the unanodised sheet.

6.2 In order to assess whether the extent of protection is broadened, the extent of protection of the granted patent needs to be determined.



6.3 The granted claim does not expressly indicate whether the difference in the Mg concentration of 0.05 mass% or less relates to the unanodised or to the anodised sheet. While the granted patent does not define any anodising step as part of the claimed method, it is indicated that the "aluminium alloy sheet requires an anodic oxide coating" and that it is "to be anodised". The aluminium sheet is furthermore defined by reference to a property of the anodised sheet, namely an "excellent surface quality" after anodising.

Having regard to the claim as a whole, the expression "outermost surface area of the aluminium alloy sheet" can relate to the unanodised sheet or to the anodised sheet, in which latter case the anodic oxide coating would constitute the outermost surface area. The language of the claim therefore needs interpretation, in that it needs to be clarified whether the difference in the Mg concentration of 0.05 mass% or less relates to the unanodised or to the anodised sheet.

6.4 In accordance with Article 69(1) EPC, the extent of protection shall be determined by the claims and the description shall be consulted to interpret them. In this case, the only possible interpretation that can be derived from the description (paragraphs [0012], [0033]) is that the indicated difference in the Mg concentration of 0.05 mass% or less relates to the anodised sheet. This interpretation is supported by the specific examples, which otherwise would be outside the scope of the granted claim.

6.5 During the discussions in this case, several board of appeal decisions were cited to show that the description should not be taken into account to interpret the granted claim, assuming that the claim in

itself was clear and unambiguous (T 1018/02, Reasons 3.8; T 1408/04, Reasons 1; T 197/10, Reasons 2.3, and T 1127/16, Reasons 2.6.2).

- 6.6 However, the view that the claim is clear in itself cannot be maintained for the reasons indicated (point 6.3), and the approach for dealing with clear and unambiguous claims is not applicable to this case.
- 6.7 In conclusion, when correctly interpreted, the granted claim encompassed a method in which the Mg concentration between adjacent bands of 0.05 mass% or less related to the aluminium alloy sheet after anodising and was 0.20 mass% or less in the unanodised sheet. The claim at issue here therefore does not extend the scope of protection and the requirements of Article 123(3) EPC are met.
7. Sufficiency of disclosure
- 7.1 This objection was raised against the granted patent and not formally repeated against the claim at issue. It is nevertheless taken into consideration insofar as the wording of the claim remained the same.
- 7.2 The claim at issue does not require the difference in Mg concentration to be 0.05 mass% or less in the unanodised sheet, and the corresponding objection is thus irrelevant.
- 7.3 The appellant cited two examples from other documents (D1 and D3) which exhibit streak patterns even though the homogenisation treatment was as required in the claim. However, the claimed invention not only requires a certain homogenisation treatment, but also involves

selecting an ingot whose rolling target side has a structure in which the difference in the Mg concentration is as specified in the claim. There is no indication that the ingots used in the cited prior art examples have the required structure.

- 7.4 The claimed invention does not require an ingot which does not have the required structure to be adapted accordingly. Such an ingot would simply not be selected. There is no evidence that the skilled person would be unable to provide and select suitable ingots.
- 7.5 There is no reason either why the electron probe microanalysis (EPMA) would be unsuitable or impossible.
- 7.5.1 The reference to a peritectic element in the patent ([0013]) would readily be recognised as an error and would not prevent the skilled person from measuring the Mg concentration.
- 7.5.2 The appellant's objection is primarily based on D6. However, D6 relates to a different measurement task, namely the measurement of precipitates (such as  $Mg_2Si$ ) in the nanometer range using STEM (scanning transmission electron microscopy), and is thus irrelevant to the claimed invention.
- 7.5.3 EPMA measurement results are provided in the patent in suit (examples) and there is no evidence that the skilled person would be unable to carry out these measurements.
- 7.6 There is consequently no convincing objection of insufficiency of disclosure.

8. Novelty

8.1 It was not in dispute that the claimed subject-matter was novel. None of the cited documents D1-D3 disclosed a method including a step of using EPMA to measure the Mg concentration to select the ingot after homogenisation.

9. Inventive step

9.1 This objection, too, was raised against the granted claim and not formally repeated against the claim at issue. It is nevertheless taken into consideration because, in this case, the amendments did not concern the question of inventive step but addressed the objection under Article 100(c) EPC, making explicit what the respondent considered to be implicit or inherent in the granted claim (point XI.).

9.2 The patent in suit relates to producing an aluminium alloy sheet that exhibits excellent surface quality after anodising without showing a band-like streak pattern (paragraph [0001]).

9.3 Document D1 relates to the production of an aluminium alloy plate material which exhibits superior surface characteristics ("a beautiful surface") after anodising, and thus relates to the same problem.

9.4 The appellant argued that the objective technical problem was merely the provision of an alternative, because the aluminium sheets known from D1 also exhibited the desired surface quality after anodising, showing no band-like streak patterns. In their opinion,

the selection step based on EPMA had no technical effect and was thus useless.

- 9.5 The board does not agree. The selection step based on EPMA is applied to the ingot and thus makes it possible to verify the success of the homogenisation treatment and to identify and discard unsuitable ingots at an early stage of the method. It thus makes it possible to enhance the quality of the method as a whole.
- 9.6 While EPMA as such is known, the skilled person finds no guidance in the cited prior art for using it for the purpose indicated, of selecting the ingot.
- 9.7 The same considerations apply starting from D2, the distinguishing feature being the same (point 8.).
- 9.8 The claimed method therefore involves an inventive step (Article 56 EPC).

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of the auxiliary request submitted as the second auxiliary request with the letter dated 2 November 2021.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated