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**Datasheet for the decision  
of 7 March 2023**

**Case Number:** T 0895/20 - 3.3.05

**Application Number:** 12747128.2

**Publication Number:** 2675933

**IPC:** C22C21/00, C22C21/12

**Language of the proceedings:** EN

**Title of invention:**

2XXX SERIES ALUMINUM LITHIUM ALLOYS

**Patent Proprietor:**

Arconic Technologies LLC

**Opponent:**

Constellium Issoire/C-TEC Constellium Technology  
Center

**Headword:**

2XXX SERIES ALUMINUM LITHIUM ALLOYS/Arconic

**Relevant legal provisions:**

EPC Art. 100(a), 100(b), 54, 56  
RPBA 2020 Art. 13(2)

**Keyword:**

Grounds for opposition - insufficiency of disclosure (no) -  
lack of patentability (no)

Novelty - (yes)

Inventive step - (yes)

Amendment after summons - exceptional circumstances (no)

**Decisions cited:**

T 0593/09, T 0653/93, T 0065/96

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 0895/20 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 7 March 2023**

**Appellant:** Constellium Issoire/C-TEC Constellium Technology  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 4 February 2020  
rejecting the opposition filed against European  
patent No. 2675933 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman**            E. Bendl  
**Members:**            J. Roider  
                             P. Guntz

## Summary of Facts and Submissions

I. The appeal of the opponent (appellant) lies from the opposition division's decision to reject the opposition.

II. The following documents, which were already cited in the opposition proceedings, are relevant here:

D1	US 2009/0159159 A1
D3	US 5,455,003 A
D4/D4a	CN 101967588 A & its translation into English
D5	CA 1,340,718 C

III. Claim 1 of the main request in the appeal procedure (claims as granted) reads as follows:

*A wrought aluminum alloy product having a thickness of at least 12.7 mm, the aluminum alloy consisting of:*  
*from 3.00 to 3.80 wt. % Cu;*  
*from 0.05 to 0.35 wt. % Mg;*  
*from 0.975 to 1.385 wt. % Li;*  
*wherein  $-0.3 \cdot \text{Mg} - 0.15 \text{Cu} + 1.65 \leq \text{Li} \leq -0.3 \cdot \text{Mg} - 0.15 \text{Cu} + 1.85$ ;*  
*from 0.05 to 0.50 wt. % of at least one grain structure control element, wherein the at least one grain structure control element is selected from the group consisting of Zr, Sc, Cr, V, Hf, other rare earth elements, and combinations thereof;*  
*up to 1.0 wt. % Zn;*  
*up to 1.0 wt. % Mn;*  
*up to 0.12 wt. % Si;*  
*up to 0.15 wt. % Fe;*  
*up to 0.15 wt. % Ti;*

*up to 0.10 wt. % of any other element, with the total of these other elements not exceeding 0.35 wt. %; and the balance being aluminum.*

The dependent claims concern particular embodiments of the invention.

IV. The key arguments of the appellant can be summarised as follows:

Admission of new data

In-house data showed that the material in D1 exceeded the claimed tensile yield strength in the short-transverse direction. It only became available the day before the oral proceedings. Since it was highly relevant, it should be admitted.

Article 100(b) EPC

The end values of the lithium range were characterised by three digits after the decimal point, while the end values of the copper and magnesium ranges were less precisely defined. The inequations of claim 1 however yielded different results depending on whether two or three digits after the decimal point were considered for lithium. If the Li content was 1.304 wt. %, the inequation was solved depending on whether the exact number or a number rounded to 1.3 wt. % was used. Therefore the content of lithium was ill-defined.

Article 54(1) and (2) EPC

In view of the examples, preferred ranges and rounding errors, documents D1, D3 and D4 disclosed the subject-matter of claim 1.

Article 56 EPC

The technical problem to be solved was to provide an alternative wrought aluminum alloy product, or to reduce weight or cost.

The subject-matter of claim 1 was thus obvious to the skilled person starting from D1, D3 or D5.

- V. The key arguments of the patent proprietor (respondent) can be summarised as follows:

Admission of new data

It was requested that the in-house data not be admitted since D1 had been filed with the notice of opposition and if the appellant needed in-house data for its case it should have filed it earlier.

Article 100(b) EPC

The appellant's objection related to a lack of clarity concerning the exact limits of the claim.

Article 54(1) and (2) EPC

None of the documents disclosed a material with the claimed composition.

Article 56 EPC

The patent in suit provided a thick plate for aerospace applications with through-thickness properties as shown by an improved fracture toughness with respect to the tensile yield stress (TYS) in the short-transverse direction (ST). None of the documents showed this relationship and could direct the skilled person to the claimed alloy.

VI. Requests as to the substance:

The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the patent be maintained in amended form based on one of auxiliary requests 1 to 14 as submitted during the opposition proceedings and resubmitted with the reply to the statement of grounds of appeal.

**Reasons for the Decision**

1. Admissibility

The appellant in the oral proceedings before the board requested that in-house data on the tensile yield strength in the short-transverse direction of alloy B of document D1 be introduced. The appellant argued that the data had been received only the day before, but was highly relevant and should thus be admitted.

This request is an amendment to the appellant's appeal case, and according to Article 13(2) RPBA 2020 is not taken into account unless there are exceptional circumstances justified by cogent reasons.

The late availability of relevant data does not qualify as exceptional circumstances in the present case, particularly because the relevant data is in-house data of the appellant that could have been produced earlier.



The new data is thus not taken into account.

Main request

2. Article 100(b) EPC

The subject-matter of claim 1 specifies an aluminum alloy product of a certain thickness, consisting of specified amounts of the alloying components.

There is no reason to consider fewer digits for the lithium content than what the subject-matter of claim 1 stipulates.

Even if the appellant's view were accepted, the argument could not be accepted.

The skilled person not knowing whether they were working, with respect to the claimed lithium range, (slightly) within or slightly outside the claimed range is by itself not a reason to deny sufficiency of disclosure as required by Article 83 EPC ([T 593/09](#), Reasons 4.1.4).

From exemplary calculation provided by the appellant, it is evident and also acknowledged by the appellant that the alleged uncertainty affects the limits of the claimed range only.

There is no evidence on file showing that the lithium content is so ill-defined that the skilled person is not able, on the basis of the disclosure as a whole and using common general knowledge, to identify without undue burden the technical measures necessary to produce the alloy.

The requirements of Article 100(b) EPC are therefore met.

3. Article 100(a) EPC with Article 54(1) and (2) EPC

The appellant argues that each of D1, D3 and D4 anticipates the novelty of the subject-matter of claim 1.

3.1 D1 shows ranges for copper and lithium which are considerably broader than the claimed ranges, containing them entirely. The range for the magnesium content is also much broader in D1, partly overlapping with the claimed range. Only the range for the zirconium content is narrower in D1, partly overlapping with the claimed range.

The preferred ranges of D1 for copper and lithium are not entirely contained within the ranges of the subject-matter of claim 1 of the patent in suit either, but show a partial overlap. The preferred range for magnesium is 0.3-0.5 wt. % and thus almost entirely outside the claimed range.

Considering the preferred range for all the alloying elements but magnesium already involves hindsight. Moreover, in D1 the presence of silver is preferred. Indeed, apart from the AA7050 alloy, a comparison example in D1, all the examples of D1 contain an amount of silver which exceeds the allowable amount in the claimed alloy.

It is established case law that the question of novelty cannot be assessed by contemplating the ranges of the various elements individually, since the subject-matter

of claim 1 is constituted by the combination of the ranges of the composition (see Case Law Book, 9th ed., I.C.6.3.3, particularly [T 653/93](#), point 3.2.1 and [T 65/96](#), point 5.3.1).

The appellant moreover argued that alloy B of D1 had a composition close to the claimed alloy because it showed at least equivalent properties, such that D1, alloy B anticipated novelty. However, alloy B of D1 has a higher content of Mg and Ag as well as a lower Li content than the claimed alloy. Therefore the subject-matter of claim 1 differs from alloy B by the combination of three alloying elements. Even if the material properties were at least equivalent to those of the claimed alloy, as alleged by the appellant, alloy B could not anticipate the subject-matter of claim 1.

Therefore the subject-matter of claim 1 is novel over D1.

- 3.2 The appellant argues that example 97 of D4 was only distinguished from the claimed compositions in the amount of Mg of 0.4 wt. % (compared with an upper limit of 0.35 wt. % in claim 1 of the patent in suit). According to its interpretation, 0.4 wt. % should be read as meaning the range of from 0.35 to 0.44 wt. %. The lower limit would then form a basis for a novelty attack.

Even if, for the sake of argument, the board accepted this line of reasoning (which it does not), it was not evident whether the value of 0.4 wt. % was the result of rounding at all or whether it was the result of rounding the lower limit (0.35 wt. %), the higher limit (0.44 wt. %) or any other value within these limits.

Therefore, assuming that the value of 0.4 wt. % was the result of rounding, a measured value of 0.35 wt. % amounts to speculation. Thus, even when accepting this approach, novelty of the subject-matter of claim 1 would have to be acknowledged in view of D4, example 97.

Analogous considerations apply to the calculation of the Li content of D4, Example 102.

3.3 Example W of D3 comprises an Li content outside the claimed range, as conceded by the appellant. When determining novelty, it has to be examined whether the prior art discloses an example falling within the claimed subject-matter in a direct and unambiguous manner.

Example W already represents a combination of features. Combining this specific example with the general teaching of D3 (even with the most preferred one) amounts to an *ex post facto* analysis and cannot be considered a direct and unambiguous disclosure.

Therefore the subject-matter of claim 1 is novel over D3.

4. Article 100(a) EPC with Article 56 EPC

4.1 The patent in suit is directed to a wrought 2xxx aluminum-lithium alloy product.

4.2 The appellant cited D1, D3 and D5 as starting points for an inventive-step objection.

D1 is directed to a rolled product made from an aluminum-lithium alloy of the 2xxx series.

D3 is directed to a rolled aluminum-copper-lithium alloy product.

D5 is directed to a rolled aluminum-copper-lithium alloy product.

- 4.3 D5 deals with fracture toughness and mechanical strength, which is at least similar to the problem as formulated by the respondent. D5, in particular alloy XIII, from which the subject-matter of claim 1 differs by the content of only two alloying elements, is considered the most promising starting point for an inventive-step objection.
- 4.4 According to the respondent, the patent in suit provided a thick plate for aerospace applications with through-thickness properties as shown by an improved fracture toughness with respect to the TYS in the ST-direction.
- 4.5 The appellant argues that Tables 7 and 9 of the patent in suit disclosed for both a 63 mm and a 102 mm thick product that the inventive alloy E showed a lower TYS in the ST direction when comparing with alloy G, a comparative example. According to Tables 8 and 10, the fracture toughness in the S-L direction was lower for comparative alloy G. The appellant argued that this did not come as a surprise, but represented a well-known trend: a higher strength was accompanied by a lower fracture toughness.

As probably with all alloys of this type, the inventive alloy shows decreasing fracture toughness with increasing strength. This is apparent from Fig. 6a. But for the same fracture toughness in the S-L direction, the TYS in the ST direction is higher for

the inventive alloy than for the comparative alloy. The other examples and comparison examples provide similar results.

The problem as stated by the respondent must hence be considered solved and the problem as stated by the respondent must not be reformulated to a different problem, such as to provide a lower density or cost or an alternative (see Case Law Book, 9th ed., chapter I.D.4.4.).

- 4.6 In D5, the alloy XIII has a higher copper content (5.4 wt. % vs. the claimed 3.00-3.80 wt. %) and a higher magnesium content (0.4 wt. % vs. the claimed 0.05-0.35 wt. %).
- 4.7 The detailed description of D5, pages 19-20 discloses two distinct embodiments of an alloy comprising either 5.0-7.0 wt. % Cu or 3.5-5.0 wt. % Cu. Example XIII and Figure 13 which the appellant refers to belong to the embodiment comprising 5.0-7.0 wt. % Cu (see Table 1 and paragraph bridging pages 19 and 20). It is not apparent why the skilled person, starting from this example of D5, would consider alloys with less than 5 wt. % Cu, or even significantly less as in the claimed alloy.
- 4.8 Moreover, a cold deformation such as rolling was not disclosed for the values shown in Figures 13 and 19, so it can only be concluded that a machine direction is either not present or not considered relevant. Consequently, the orientation of the samples is not disclosed in D5.

4.9 A skilled person thus cannot be directed to the solution of the problem as stated by the respondent.

4.10 Alternative starting points for the inventive-step objection

Concerning the starting points D1, alloys A, B and C or D3, alloy W, the appellant assumes that the technical problem relates to the reduction in density and cost (D1) or the provision of an alternative (D3).

The technical problem as stated by the respondent is solved by the patent. Like D5, D1 and D3 do not disclose the tensile yield strength in the short-transverse direction. D1 and D3 hence do not show that they also solve the problem as stated by the respondent. The technical problem must not be reformulated and cannot be considered to be any of those proposed by the appellant. The skilled person would thus not arrive at the subject-matter of claim 1 without hindsight.

**Order**

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

The appeal is dismissed

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated