Internal distribution code:

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

Datasheet for the decision of 29 May 2026

Case Number: T 0189/25 - 3.3.05

Application Number: 20700114.0

Publication Number: 3911777

IPC: C22C21/10, C22F1/053

Language of the proceedings: EN

Title of invention:
7XXX-SERIES ALUMINIUM ALLOY PRODUCT

Patent Proprietor:
Novelis Koblenz GmbH

Opponent:
Arconic Corporation

Headword:
7XXX-SERIES ALUMINIUM ALLOY PRODUCT/Novelis

Relevant legal provisions:
RPBA 2020 Art. 13(2)
EPC Art. 100(b), 54, 56

This datasheet is not part of the Decision
It can be changed at any time and without notice

Keyword:

Amendment after summons - exceptional circumstances (no)
Grounds for opposition - insufficiency of disclosure (no)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

This datasheet is not part of the Decisior
It can be changed at any time and without notic

Europäisches Patentamt
European Patent Office
Office européen des brevets

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

Case Number: T 0189/25 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 29 May 2026

Appellant: (Opponent)	Arconic Corporation 201 Isabella Street Pittsburgh, PA 15212-5858 (US)
Representative:	Forresters IP LLP Skygarden Erika-Mann-Straße 11 80636 München (DE)
Respondent: (Patent Proprietor)	Novelis Koblenz GmbH Carl-Spaeter-Strasse 10 56070 Koblenz (DE)
Representative:	Weickmann & Weickmann PartmbB Postfach 860 820 81635 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted/electronically transmitted on 3 December 2024 rejecting the opposition filed against European patent No. 3911777 pursuant to Articl e 101(2) EPC.**

Composition of the Board:

Chair	R. Winkelhofer
Members:	J. Roider
	T. Burkhardt

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division to reject the opposition against European patent No. 3 911 777 B1. It concerns a wrought 7xxx-series aluminium alloy product designed to achieve a favourable balance of high strength, stress corrosion resistance and resistance to crack deviation, in particular for structural applications such as in aerospace.

II. The following documents are referred to:

D4 US 5,047,092 A
D6 EP 0 030 070 A1
D13 WO 2020/099174 A1

III. Main request

Claim 1 of the main request (patent as granted) reads (feature reference numbers in the left column):

1a) *"1. A wrought 7xxx-series aluminium alloy product having a composition comprising, in wt %.,*
1b) *Zn 6.50 to 7.20,*
1c) *Mg 2.30 to 2.60,*
1d) *Cu 1.30 to 1.80,*
1e) *and wherein Cu+Mg < 4.50,*
1f) *and wherein Mg < 2.5 + 5/3(Cu - 1.2),*
1g) *Fe up to 0.25,*
1h) *Si up to 0.25,*
1i) *and optionally one or more elements selected from the group consisting of:*

1j) *Zr up to 0.3,*

1k) *Cr up to 0.3,*

1l) *Mn up to 0.45,*

1m) *Ti up to 0.25,*

1n) *Sc up to 0.5,*

1o) *Ag up to 0.5,*

1p) *the balance being aluminium and impurities,*

1q) *and wherein said product is aged to achieve:*

1r) *- a conventional tensile yield strength (in MPa) measured in the L-direction measured at quarter thickness of more than 485-0.12*(t-100) MPa (t being the thickness of the product in mm);*

1s) *- a minimum life without failure due to stress corrosion cracking (SCC) measured in accordance with ASTM G47-98 of at least 30 days at a short transverse (ST) stress level of 170 MPa;*

1t) *- a minimum $K_{max-dev}$ value without crack deviation due to crack propagation testing in standard atmosphere at room temperature in accordance with ASTM E647-13e01 in L-S direction on CT samples of at least 40 MPa√m on average, preferably of at least 45 MPa√m on average, testing in a load controlled fatigue test and crack deviation defined as a crack deviating more than 20° from the intended fracture plane."*

Claim 15 of the main request reads (feature reference numbers in the left column):

15a) *"15. Method of manufacturing a rolled aluminium alloy product*

15b) *according to any one of claims 1 to 14,*

15c) *preferably having a gauge of at least 12.7 mm,*

15d) *the method comprising the steps of:*

15e) *(a) casting an ingot having a composition according to any one of claims 1 to 8;*

15f) *(b) homogenizing the cast ingot;*

15g) *(c) hot rolling the cast ingot to a hot rolled product having a thickness of at least 12.7 mm;*

15h) *(d) optionally cold working of the hot rolled product;*

15i) *(e) solution heat treating of the rolled product;*

15j) *(f) cooling of the solution heat treated product, preferably by one of spray quenching or immersion quenching in water or other quenching media;*

15k) *(g) stretching of the solution heat treated and cooled product, preferably in the range of 0.5% to 6% of its original length; and*

15l) *(h) artificially aging to a T7 condition, preferably selected from the group consisting of T7451, T7651, T7751, and T7951, to achieve:*

15m) *- a conventional tensile yield strength (in MPa) measured in the L-direction measured at quarter thickness of more than 485-0.12*(t-100) MPa (t being the thickness of the product in mm);*

15n) *- a minimum life without failure due to stress corrosion cracking (SCC) measured in accordance with ASTM G47-98 of at least 30 days at a short transverse (ST) stress level of 170 MPa;*

15o) *- a minimum $K_{max-dev}$ value without crack deviation due to crack propagation testing in standard atmosphere at room temperature in accordance with ASTM E647-13e01 in L-S direction on CT samples of at least 40 MPa√m on average, preferably of at least 45 MPa√m on*

average, testing in a load controlled fatigue test and crack deviation defined as a crack deviating more than 20° from the intended fracture plane."

Claims 2 to 14 are dependent on claim 1.

IV. The respondent (patent proprietor) essentially argued that the patent in suit fulfilled the requirements of the EPC.

V. The appellant (opponent) essentially argued that the patent in suit did not meet the requirements of Article 100(b) EPC, Article 100(a) EPC/Article 54 EPC in view of D13 and Article 100(a) EPC/Article 56 EPC starting from D4 or D9.

VI. Requests with regard to the substance

The appellant requests that the decision under appeal be set aside and amended such that the patent be revoked.

The respondent requests that the appeal be dismissed (main request) or that the patent be maintained on the basis of one of auxiliary requests 1 to 8, resubmitted with the reply to the appeal, or auxiliary request 9, first filed with the reply to the appeal.

Reasons for the Decision

1. Sufficiency of disclosure, Article 100(b) EPC

1.1 The appellant's objection against claim 1 under Article 100(b) EPC is unfounded.

1.2 The appellant's argument of a contradiction between the findings on novelty and sufficiency is not persuasive. These are distinct legal assessments based on the content of different documents: novelty is assessed against the disclosure of the prior art (D13), whereas sufficiency is assessed based on the disclosure of the patent in suit itself.

The patent provides a clear and workable method for carrying out the invention. Example 1 discloses in paragraph [0057] a production method with a two-step ageing protocol which, when applied to the inventive alloys A5 and A6, achieves the combination of properties required by claim 1 (see Table 3). The requirement to disclose at least one way of performing the invention is therefore fulfilled.

Furthermore, this teaching is generalisable across the scope of the claim without undue burden. The patent consistently directs the skilled person towards a T7 temper condition (e.g. paragraph [0010] and claim 10), which is a well-understood concept in the field. A skilled person, guided by the patent's examples, is capable of performing routine adjustments to the ageing parameters to achieve the claimed properties for other compositions within the claim. Such routine optimisation does not constitute an undue burden.

The appellant did not provide evidence to the contrary.

1.3 Admission and consideration of an Article 100(b) EPC objection (claim 13)

The appellant argued that unlike the mechanical properties claimed in claim 1, the mechanical properties claimed in claim 13 were superior to the

mechanical properties shown in the examples of the patent in suit. Therefore, the patent in suit did not show how to achieve them.
The appellant acknowledged that this argument had been raised only before the opposition division but has not been raised so far in the appeal proceedings. However, it was allegedly only a development of the arguments submitted against claim 1.

The respondent requested that this objection be not admitted into the proceedings in accordance with Article 13(2) RPBA.

It is undisputed that the objection under Article 100(b) EPC against claim 13 is a new objection in the appeal proceedings.

Contrary to the appellant's view, the board considers that this objection constitutes more than a mere development of the arguments against claim 1. Whereas, in relation to claim 1, the appellant essentially argued that the claim was broad and that, despite falling within claimed (open) range, the examples in the patent in suit were not representative of the entire claimed range, they argued in relation to claim 13 that the lower limit of the claimed mechanical properties exceeded the mechanical properties shown in the examples, with the result that the examples did not show how to achieve the claimed mechanical properties.

Therefore, the essence of the arguments against claim 1 is different from those against claim 13 such that it is not a mere development of existing arguments.

There are no exceptional circumstances justifying the objection being raised only at this stage of the

proceedings; such circumstances were also not invoked.

Therefore, the new objection cannot be admitted into the proceedings (Article 13(2) RPBA).

2. Novelty, Article 100(a) EPC/Article 54(3) EPC

The question of admission of D13 notwithstanding, the appellant's objection under Article 100(a) EPC with Article 54(3) EPC, in view of D13, is unfounded.

2.1 It is uncontested that D13 does not contain explicit disclosure of feature 1t). The novelty of claim 1 therefore hinges on whether feature 1t) is implicitly disclosed in D13.

2.2 For a feature to be regarded as implicitly disclosed in D13, it must be implied by what is explicitly disclosed and thus be the clear and unambiguous consequence of that disclosure. Therefore, the skilled person, following the instructions in D13, would have to inevitably arrive at a result falling within the terms of claim 1 of the patent in suit (see Case Law of the Boards of Appeal of the EPO, 11th edn. 2025, I.C.4.3).

The burden of proof for establishing that the subject-matter of claim 1 of the main request - i.e. the granted version of the patent - lacks novelty lies with the opponent (appellant), also under the circumstances of the case in hand. They must demonstrate that the direct and unambiguous disclosure of D13, either explicit or implicit, would inevitably lead to the claimed subject-matter.

2.3 The appellant argued that because the alloy composition and the general ageing process (i.e. ageing to a T7 temper) described in D13 were identical to those of the patent in suit, the resulting product had to be identical in all its properties. Consequently, feature 1t) was an inherent property of the product disclosed in D13.

2.3.1 This is unconvincing.

Claim 1 is a product claim defined in part by a functional technical feature, namely that the product is "aged to achieve" a specific combination of three mechanical properties: 1r), 1s) and 1t). This wording means that the ageing process itself is limited to only those process conditions which result in all three of these properties being met simultaneously. While D13 discloses a general class of T7 tempers, it does not provide any working examples with concrete ageing temperatures and times. As the opposition division emphasised, it is *possible* that certain T7 ageing conditions disclosed in D13 could result in a product that meets the strength requirement (1r) and the stress corrosion cracking (SCC) requirement (1s), but not the crack deviation requirement (1t). This has also not been disputed.

The appellant did not show that carrying out the teaching of D13 would inevitably lead to a product also possessing the crack deviation resistance defined by feature 1t).

Its argument that the claimed mechanical properties 1r), 1s) and 1t) were inherent in the T7 temper is hence based on speculation not supported by evidence.

Hence, D13 does not disclose the subject-matter of claim 1 in a direct and unambiguous manner.

The same applies to claim 15 since, by reference, it contains all features of claim 1.

No further objection under Article 100(a) EPC (novelty) was raised.

3. Inventive step, Article 100(a) EPC/Article 56 EPC

The patent in suit is directed to a wrought 7xxx-series aluminium alloy product.

3.1 At the appeal stage, D4 and D9 were drawn upon as suitable starting points for an inventive-step assessment of the subject-matter of claim 1.

D4 is directed to spray-deposited 7xxx-series alloys with improved properties.
D9 is directed to hot-rolled 7xxx-series alloys for aircraft applications.

As both documents relate to the same technical field and similar objectives, they are both suitable starting points.

3.2 **D4**

The problem the patent in suit aims to solve is to provide an improved balance of high strength and high SCC resistance in combination with good crack deviation resistance (patent in suit, paragraph [0010]).

3.2.1 It is proposed to solve this problem by the subject-matter of claim 1, which differ from D4, alloy 4 (Table 1), in the following features.
- The chromium content is lower (up to 0.3 wt.% in claim 1, versus 0.35 wt.% in D4, alloy 4).
- The claimed product is aged to achieve the combination of mechanical properties defined by features 1r), 1s) and 1t), which are not disclosed for alloy 4 of D4. Moreover, alloy 4 of D4 is obtained by spray deposition, whereas the alloy of the invention is obtained by casting. This is, as argued by the respondent, another reason why the mechanical properties of alloy 4 of D4 are not *necessarily* as claimed by features 1r), 1s) and 1t).

3.2.2 The appellant argued that no technical effect had been demonstrated because the examples in the patent did not include a direct comparison varying the Cr content.

This is not convincing.

The patent's examples show that the objective technical problem is solved for alloys falling within the scope of the claim since these examples have the desired properties (see Table 3 of the patent in suit).
Under these circumstances, the burden of proof lies with the appellant to show that the claimed effect was either already present in D4, alloy 4, or that the distinguishing features do not contribute to that effect.

The appellant has provided no evidence that the alloy 4 of D4, with its higher Cr content, allows achieving the quantitative balance of properties defined in features 1r), 1s) and 1t).

It is technically conclusive that the differing Cr content also contributes to this effect. According to the patent (paragraphs [0019] and [0022]), Cr content influences the grain structure. This is an indication that this difference affects the mechanical properties, particularly the crack deviation resistance (feature 1t). The assumption that there was no such effect, absent any evidence to the contrary, is speculative.
Moreover, paragraphs [0022], [0023] and [0026] of the patent teach to limit the Cr content to 0.3% and, preferably, significantly lower. This further supports the conclusion that the Cr content is not an arbitrary limit.

Therefore, there is no evidence showing that the lower Cr content, in combination with the other claim features, has no effect. The Cr content of 0.35% in D4, Table 1, alloy 4, could lead to a grain structure which does not allow achieving the claimed properties, particularly the crack deviation properties (feature 1t).

In view of the above, the appellant's argument that the differences must be evaluated in separate problem-solution approaches is not convincing, irrespective of its admittance, as it was raised for the first time in the oral proceedings before the board.

Therefore, the objective technical problem to be solved is that set out in the patent in suit.

3.2.3 The skilled person, starting from D4, would have no reason to solve this problem by reducing the Cr content to 0.3%, let alone to values below. In fact, D4 teaches away from such a modification by explicitly requiring a

Cr content of at least 0.3 wt.% (see claim 1) to achieve its own desired properties described in column 2, lines 37 to 41, by exploiting the dispersoid forming effect of Cr. As argued by the respondent, this is confirmed by the passage starting in column 3, line 65 of D4.
There is no incentive for the skilled person to modify the alloy 4 of D4, in the claimed manner (e.g. by choosing a Cr content corresponding to the single point of overlap indicated in the general disclosure, i.e. 0.3 wt.%), and no reasonable expectation of success in solving the objective problem by doing so.

The dispersoid forming effect is also acknowledged in the patent in suit (paragraph [0022]), followed by the requirement to limit the Cr level preferably to below 0.3%.
The fact that paragraph [0022] uses the word "preferably" does not change the fact that the Cr levels in the patent in suit should generally be below the Cr levels used in D4.

3.3 **D9**

The appellant relied on alloy 4 of D9, which has an Mg content below the claimed range, and alloys 1 to 3 and 6 of D9, each having a Zn content below the claimed range.

3.3.1 The problem the patent in suit aims to solve is to provide an improved balance of high strength, high SCC resistance and good crack deviation resistance (patent in suit, paragraph [0010]).

3.3.2 D9, alloys 1 to 3 and 6

It is proposed to solve this problem by the subject-matter of claim 1, which differs from alloys 1 to 3 and 6 of D9 (see Table 1) in the following features.
- The Zn content is significantly higher (feature 1b: 6.50 to 7.20 wt.%, versus 5.7 to 5.9 wt.% in alloys 1 to 3 and 6 of D9).
- The claimed product is aged to achieve the properties of features 1r), 1s) and 1t), whereas the alloys of D9 are provided in a T6 temper, for which these properties are not disclosed.

The patent in suit's examples, particularly the comparison between inventive alloy A5 and comparative alloy A3 having a slightly lower Zn content, demonstrate that this combination of features results in a product having the claimed properties.

Therefore, the objective technical problem corresponds to the problem formulated above (i.e. patent in suit, paragraph [0010]).

3.3.3 D9, alloys 1 to 3 and 6 with common general knowledge

D9 explicitly and repeatedly teaches that its alloys in the T6 temper are "superior" to conventional methods, and optimises the composition for the T6 temper. In view of D9 alone, the skilled person would therefore have no incentive to deviate from this teaching and abandon the recommended T6 temper.

They would therefore not achieve the claimed subject-matter.

3.3.4 D9, alloys 1 to 3 and 6 with D2

The appellant further argued that D2 would prompt a

skilled person to replace the T6 temper with a T7 temper to improve SCC resistance.

Even if, for the sake of argument, the skilled person were to regard a T7 temper in view of D2, there is no teaching in either D9 or D2 that suggested simultaneously increasing the Zn content into the range of claim 1. D2 is silent on such compositional modifications, and D9's teaching on the optimal Zn content is linked to the T6 temper (D9, page 7, first paragraph). A modification of D9 towards a T7 temper with a specific compositional change would require knowledge of the invention and would thus rely on hindsight.

3.3.5 D9, alloy 4

A similar reasoning applies when starting from alloy 4 of D9 (Table 1), which differs in its Mg content.

It is proposed to solve this problem by the subject-matter of claim 1, which differ from alloy 4 of D9, the closest embodiments, in the following features.
- The Mg content is significantly higher (feature 1c: 2.30 to 2.60 wt.%, versus 2.2 wt.% in alloy 4 of D9).
- The claimed product is aged to achieve the properties of features 1r), 1s) and 1t), whereas the alloys of D9 are provided in a T6 temper, for which these properties are not disclosed.

According to paragraph [0013] of the patent in suit, the claimed range of the Mg content is essential for providing sufficient strength in combination with an increased minimum $K_{max-dev}$ value without crack deviation.
According to paragraphs [0063] and [0064], a higher Zn

content also provides a higher strength in the L-direction but reduces the resistance against crack deviation.
Comparative alloy A2 of the patent in suit has a higher Zn but a lower Mg content. By reducing the Zn content and increasing the Mg content as shown alloys A5 and A6, the desired properties can be achieved.

In the absence of evidence to the contrary, it cannot be assumed that alloy 4 of D9 solves the problem, whereas, in view of the examples of the patent in suit and its general teaching, the distinguishing features over alloy 4 of D9 solve the technical problem.

It follows that the objective technical problem corresponds to the problem formulated above (i.e. patent in suit, paragraph [0010]).

D9 likewise links its teaching on the optimal Mg content to the T6 temper. For analogous reasons to those set out for D1 and alloys 1 to 3 and 6 of D9, the subject-matter of claim 1 is not rendered obvious by the common general knowledge or D2, also when starting from alloy 4 of D9.

Claim 15 contains all features of claim 1, including the T7 temper. Therefore, it is not rendered obvious by D9 for the same reasons as claim 1.

3.4 No further objection under Article 56 EPC was raised by the appellant.

The subject-matter of claim 1 involves an inventive step (Article 56 EPC).

The same reasoning applies to the subject-matter of the other claims since they directly or indirectly refer back to claim 1.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

C. Vodz R. Winkelhofer

Decision electronically authenticated