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**Datasheet for the decision
of 6 July 2010**

Case Number: T 0090/08 - 3.2.08

Application Number: 99963330.8

Publication Number: 1144704

IPC: C22F 1/057

Language of the proceedings: EN

Title of invention:

Damage tolerant aluminium alloy product and method of its
manufacture

Patentee:

Aleris Aluminum Koblenz GmbH

Opponent:

ALCAN FRANCE S.A.S.

Headword:

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Relevant legal provisions:

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Relevant legal provisions (EPC 1973):

EPC Art. 114(2), 54(2), 56

Keyword:

"Late-filed documents (admitted in part)"

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0090/08 - 3.2.08

DECISION
of the Technical Board of Appeal 3.2.08
of 6 July 2010

Appellant I: Aleris Aluminum Koblenz GmbH
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Appellant II: ALCAN FRANCE S.A.S.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
9 November 2007 concerning maintenance of
European patent No. 1144704 in amended form.

Composition of the Board:

Chairman: T. Kriner
Members: M. Alvazzi Delfrate
U. Tronser

Summary of Facts and Submissions

- I. With its decision posted on 9 November 2007 the opposition division held that European patent No. 1 144 704 in amended form according to the third auxiliary request then on file met the requirements of the EPC.
- II. Appellant I (patent proprietor) lodged an appeal against this decision on 14 January 2008, paying the appeal fee on the same day. The statement setting out the grounds for appeal was filed on 18 March 2008.
- III. A further appeal was lodged by appellant II (opponent) on 18 January 2008, paying the appeal fee on the same day. The statement setting out the grounds for appeal was filed on 18 March 2008.
- IV. Oral proceedings before the board of appeal were held on 6 July 2010.
- V. Appellant I requested that the decision under appeal be set aside and that the patent be maintained as granted.
- VI. Appellant II requested that the decision under appeal be set aside and that European patent No. 1 144 704 be revoked.
- VII. Claim 1 of the patent as granted reads as follows:
- "Product comprising an aluminium base alloy consisting of (in weight %):
- Cu 3.8 - 4.9
- Mg 1.2 -1.8

Mn 0.1 - 0.9

Fe max. 0.12

Si max. 0.10

Ti max. 0.15

Zn max. 0.20

Cr max. 0.10

impurities each max. 0.05, total max. 0.15

balance aluminium,

said product having

a minimum L-0.2% yield strength of 300 MPa or more,

a minimum LT-0.2% yield strength of 270 MPa,

a minimum T-L fracture toughness $K_{C(ao)}$ of 100 MPa \sqrt{m}

or more for a 700 mm wide CCT-panel, and

having in both L/ST- and LT/ST-sections an average grain size of at least 6 according to ASTM E-112."

Claims 2-7 are dependent on claim 1 and claim 12 relates to the use of the product in accordance with any one of claims 1 to 7 or of the product obtained from the method in accordance with any one of claims 8 to 11 as aircraft skin.

Claims 8 -11 were not subject to any opposition.

VIII. The following documents are relevant for the present decision:

D5: AIMS Standard 03-04-022, Issue 1 (June 1998);

D9: ASTM norm E112-96;

D10: W0-A-96 29440;

D16: EP-A-473 122;

D17: Documentation relating to delivery of AA2024A sheets to Aérospatiale in 1997

- D17A: Sales acknowledgment relative to order 015745;
- D17B: Order number 14 X90234;
- D17C: Inspection certificate 369111;
- D17D: Shipping advice number 008/13011A;
- D17E: Characterization results lot number 5663/042;
- D17F: Qualification A 340-600 of 27/05/1997;
- D17G: Declaration of M. Marc Barthomeuf;
- D17H: Toughness measurement experimental data;
- D17I: Declaration of M. Bernard Bes;
- D17J: Invoice relative to transport costs of 30/06/1997;

D24: R.C. Dorward, "Forming Characteristics of Coarse and Fine-Grained AA 2024 Aluminum Alloy Sheet", J. Materials Engineering and Performance 3(1) (1994) pages 115-121;

D25: "Aerospace Structural Metal Handbook", Vol. 3, ed. W.F. Brown Jr., CINDAS/USAF CRDA Handbooks Operation, Purdue University, Code 3203 pages 1,11; and

X1: Micrographs of "Produit 2024A, Etat T3-Trempe N° 73146".

IX. The arguments of appellant I can be essentially summarised as follows.

Admissibility of documents D17, D24, D25 and X1

Documents D17A to D17J, D24, D25 and X1 had been filed after expiry of the opposition period and were not relevant. Therefore, they should be disregarded.

Novelty

Even if documents D17A to D17J were admitted into the proceedings, they failed to prove that a product according to present claim 1 was delivered without obligation of confidentiality before the priority date of the patent in suit. Therefore, the claimed product was novel.

Inventive step

The most relevant prior art was represented by D10. Neither this document nor the rest of the prior art disclosed an average grain size of at least 6 according to ASTM E112a in both L/ST- and LT/ST-sections or suggested that the grain size should be controlled in different directions. Therefore, the subject-matter of claim 1 involved an inventive step.

- X. The arguments of appellant II can be essentially summarised as follows.

Admissibility of documents D17A to D17J, D24, D25 and X1

Documents D17A to D17J related to a prior use which was already mentioned in the notice of opposition and took away the novelty of the claimed product. Therefore, the opposition division was correct in admitting documents D17A to D17I into the opposition proceedings. D17J had been filed during the appeal proceedings as further evidence in respect of the delivery of the product. Since this document merely complemented the evidence

already on file, it should also be admitted into the proceedings.

Since D24 disclosed a fine structure having a low aspect ratio as advantageous, it was relevant for examining the obviousness of this feature. D25 was a handbook showing that the L yield strength was greater than the LT yield strength. Therefore, it was relevant for proving that an L yield strength according to claim 1 of the patent in suit was inherently disclosed by D10. Accordingly, documents D24 and D25 should also be admitted into the appeal proceedings.

X1 consisted of two micrographs in the L/ST- and in LT/ST-sections from a product similar to the sheets delivered in the prior use according to documents D17A to D17J. Therefore, it was evidence that these sheets exhibited an average grain size according to claim 1 in both L/ST- and LT/ST-sections. Therefore, it was highly relevant and should be taken into consideration.

Novelty

Documents D17A to D17J related to the delivery of two sheets of 2024 alloy to Aérospatiale Aéronautique. D17J and D17D proved that the delivery took place in June 1997.

Moreover, the sheets were delivered without any obligation of confidentiality. It was true that the order D17B mentioned that the sheets were for test purposes. However, since these tests were merely feasibility tests, they did not imply any confidentiality agreement. Also, the confidential

nature of document D17E was to be understood as referring merely to the measurements of the properties, and not to the alloy sheets themselves.

Since the delivered sheets exhibited the composition, the mechanical properties and the structural features of the product according to claim 1 of the patent in suit, this product lacked novelty.

Inventive step

Document D10, which could be seen as the most relevant published prior art, disclosed a product comprising an aluminium base alloy exhibiting a composition according to present claim 1 and a LT-0.2% yield strength of 314 MPa (tables 1 and 2, alloy 1). As could be seen for instance in D25, the L yield strength was normally higher than the LT yield strength. Therefore, D10 inherently disclosed also a minimum L-0.2% yield strength of 300 MPa or more. Moreover, alloy 1 of table 2 of D10 exhibited also an apparent toughness of about 98 MPa√m measured on a 16 inch wide sample. As evidenced by D5 a measure of the same property on a 700 mm wide sample would result in values about 25 MPa√m higher. Accordingly, D10 disclosed also a fracture toughness $K_{C(a0)}$ according to present claim 1.

Therefore, the claimed product was distinguished by the product known from D10 solely by the grain size. According to the patent in suit, no technical effect was associated with this feature.

D24 disclosed a 2024 sheet with a grain size of 0.01 to 0.02 mm, corresponding to a grain size of at least 6

according to ASTM E112 (D9, table 4). This sheet exhibited an equiaxed structure and improved formability. Improved formability was also an object of D10, which additionally disclosed that a small grain size improved the strength and the fracture toughness. Therefore, it would have been obvious to realise the sheet of D10 with the fine grain size according to D24, i.e. with an average grain size of at least 6 according to ASTM E112 in both L/ST- and LT/ST-sections. Accordingly, the subject-matter of claim 1 did not involve an inventive step when starting from D10 as most relevant prior art.

In the written procedure appellant II further argued that the subject-matter of claim 1 did not involve an inventive step when starting from D16. This document disclosed explicitly or implicitly all the features of claim 1 with the exception of the grain size. Since both D10 and D24 described the advantages of a fine grain size, either of these documents rendered it obvious to provide this feature. Therefore, the subject-matter of claim 1 did not involve an inventive step when starting from D16.

Reasons for the Decision

1. The appeals are admissible.
2. Admissibility of documents D17, D24, D25 and X1
 - 2.1 In the exercise of its discretionary power under Article 114(2) EPC 1973, the opposition division

decided to admit documents D17A to D17I, and D24 into the proceedings.

A board of appeal should overrule such a first-instance decision only if it concludes that the discretionary power was exceeded, abused or not exercised.

In the present case the opposition division considered that document D24 was relevant and that documents D17A to D17I related to an alleged public prior use already mentioned in the notice of opposition (see minutes of the oral proceedings before the opposition division point 1.1 and appealed decision page 4). As a consequence it decided to take D17A to D17I and D24 in consideration.

The board sees no reason to consider that the opposition division exercised its discretion in a wrong or unreasonable manner and to overrule its decision to admit the documents D17A to D17I and D24 into the proceedings. As a consequence, they are admitted also into the appeal proceedings.

2.2 X1 was filed after the expiry of the opposition period and was not admitted into the proceedings by the opposition division. D17J and D25 have been filed for the first time during the appeal proceedings.

Therefore, these late-filed documents may be admitted and considered at the board's discretion. This discretion is exercised in view inter alia of the complexity and relevance of the new documents submitted.

D17J is a further piece of evidence concerning the alleged public prior use to which documents D17A to D17I relate. Moreover, it is relevant to the issue of the delivery of the sheets, which was disputed in the first instance proceedings. Therefore, it is admitted into the appeal proceedings.

D25 is a handbook reproducing the common general knowledge of the person skilled in the art. Therefore, its study cannot involve any difficulty for the parties. Furthermore, it is relevant to the issue of the relationship between the yield strength measured in the longitudinal and in transverse directions, which has also been discussed at length by the parties. Accordingly, this document is also admitted into the appeal proceedings.

X1 does not form prior art and relates to a product which is not the same as the product which is the object of the alleged prior use. Therefore, it is not relevant and is not admitted into the appeal proceedings.

3. Novelty

Novelty has been disputed solely in view of the alleged delivery of 2024 alloy sheets to Aérospatiale Aéronautique in 1997 to which documents D17A to D17J relate.

In prior public use cases where practically all the evidence in support of an alleged prior public use lies within the power and knowledge of the opponent, an opponent must prove his case "up to the hilt", for

little if any evidence will be available to the patentee to establish the contradictory proposition that no prior public use took place.

In the present case, appellant II has failed to prove that the products were delivered to Aérospatiale Aéronautique before the priority date of the patent in suit and that the delivery was not subject to a confidentiality agreement.

The sole evidence possibly relating to the delivery of the sheets is D17D and D17J. D17D is a shipping advice dated 12/06/97, carrying the code 03009/02 for a charge of 183 Kg gross weight. D17J is an invoice relative to transport costs for a weight of 23.87 tons and carries the code CHGT 3009. Considering the non-identical codes and the discrepancy of the weights it is doubtful that both documents D17D and D17J relate to the same shipment. Moreover and most important, none of them proves that the sheets were actually delivered to Aérospatiale Aéronautique.

In addition, it is clear from D17B that the sheets were ordered for test purposes. A product made available for test purposes is normally to be treated as confidential. The submission that in the present case the tests were feasibility tests fails to convince the board of the contrary, especially in view of the fact that data sheet D17E, concerning the properties of the allegedly delivered sheet, was marked as confidential ("This document is confidentiel and the property of PECHINEY RHENALU"). It would have been contradictory to deliver without any confidentiality obligation a sheet whose properties could easily be measured while

requiring those very same properties to be treated confidentially.

Given that neither the alleged delivery nor its public character has been proven, the alleged public prior use cannot be regarded as belonging to the state of the art.

Since no further prior art has been cited with respect to the question of novelty, the subject-matter of claim 1 is novel.

4. Inventive step

4.1 Present claim 1 relates to an aluminium alloy product with good mechanical properties, obtained by a controlled composition and microstructure.

The most relevant state of the art is represented by D10, which discloses an aluminium product with a composition according to claim 1 and which also discusses the influence of production method and microstructure on the mechanical properties. D16 is less relevant, since its teaching in respect of the mechanical properties is limited to the effects of the composition.

4.2 D10 discloses a product comprising an aluminium base alloy consisting of (in weight %):

Cu 3.8 - 4.9

Mg 1.2 - 1.8

Mn 0.1 - 0.9

Fe max. 0.12

Si max. 0.10

Ti max. 0.15
Zn max. 0.20
Cr max. 0.10
impurities each max. 0.05, total max. 0.15
balance aluminium (see table 1, alloys 1-3).

Alloy 1 of D10 exhibits a transverse yield strength of 45.5 Ksi, i.e. about 314 MPa (table 2), thus falling within the range of the LT-0.2% yield strength defined in claim 1.

D10 does not explicitly disclose a minimum L-0.2% yield strength of 300 MPa or more and a minimum T-L fracture toughness $K_{C(ao)}$ of 100 MPa \sqrt{m} or more for a 700 mm wide CCT-panel. Furthermore, the parties agreed that D10 does not disclose an average grain size of at least 6 according to ASTM E112 in both L/ST- and LT/ST-sections.

- 4.3 Starting from the product disclosed in D10, the object underlying the claimed invention can be seen in providing a product with improved mechanical properties (see paragraph [0008] of the patent in suit).

According to claim 1, this object is achieved by an average grain size of at least 6 according to ASTM E112 in both L/ST- and LT/ST-sections. In the patent in suit this structure is obtained by cold rolling in both length and width directions ("cross rolling") with a total cold deformation rate of more than 60% (see paragraphs [0031] to [0033]).

Contrary to appellant II's submission, the patent in suit discloses that the fine average grain size

contributes to improve the mechanical properties (see paragraphs [0010] and [0033]); this fact is also known in the art and acknowledged for instance in D10 itself (see paragraph bridging pages 8 and 9). In the presently claimed product, the control of the grain size is done in both the L/ST- and LT/ST-sections, thus credibly resulting in better mechanical properties in different directions, i.e. in more isotropic mechanical properties (see paragraph [0019]).

- 4.4 Even if D10 itself recognises that a fine grain size improves the mechanical properties, it is completely silent on the need to provide this improvement or control the grain size in different directions, either by cross rolling or by other measures.

D24 is mainly concerned with the forming characteristics of 2024 alloy sheets. According to this document, the fine grained material, which provides better forming properties, exhibits an aspect ratio of about 2 to 3:1. This material contains relatively large insoluble constituents aligned in the rolling direction (see point 2., last paragraph); it is thus apparent that it is not produced by cross rolling. Contrary to appellant II's submission, there is no disclosure of measuring the grain size in differently oriented sections. The need to improve the mechanical properties in different orientations is not mentioned either. Therefore, D24 merely teaches to provide a fine grain size, and does not suggest the necessity to maintain it in both L/ST- and LT/ST-sections.

Accordingly, it was not obvious for the person skilled in the art aiming to improve the mechanical properties

of the sheet of D10 and considering D24 to maintain an average grain size of at least 6 according to ASTM E112 in both L/ST- and LT/ST-sections.

- 4.5 The arguments of appellant II that the claimed subject-matter was obvious when considering D16 in combination with D10 or D24 are not convincing either.

D16 does not mention the grain size and the need to control the properties in different directions. As explained above, neither D10 nor D24 suggests controlling the grain size in both L/ST- and LT/ST-sections. Therefore, they cannot render it obvious to obtain the product of D16 with a microstructure according to present claim 1.

- 4.6 With respect to the above findings, the subject-matter of claim 1, and inevitably also of claim 12 which refers to claim 1, involves an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:

V. Commare

T. Kriner