

**Internal distribution code:**

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

**D E C I S I O N**  
**of 15 January 2002**

**Case Number:** T 0591/98 - 3.2.6

**Application Number:** 91311663.8

**Publication Number:** 0494521

**IPC:** B23K 35/38

**Language of the proceedings:** EN

**Title of invention:**

Shielding gas mixture for welding superalloys

**Patentee:**

HAYNES INTERNATIONAL, INC.

**Opponent:**

AGA Aktiebolag

L'AIR LIQUIDE, S.A. pour l'étude et l'exploitation des  
procédés Georges Claude

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 83, 111(1), 113(2)

**Keyword:**

"Remittal to first instance (no)"

"Sufficiency of disclosure (no)"

"Basis of decisions - no allowable request of patentee  
available"

**Decisions cited:**

T 0409/91

**Catchword:**

-



Case Number: T 0591/98 - 3.2.6

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.6**  
**of 15 January 2002**

**Appellant:**  
(Opponent 02)

L'AIR LIQUIDE, S.A.  
pour l'étude et l'exploitation  
des procédés George Claude  
75 quai d'Orsay  
F-75321 Paris (FR)

**Representative:**

Le Moenner, Gabriel  
L'AIR LIQUIDE S.A.  
Service Propriété Industrielle  
75 quai d'Orsay  
F-75321 Paris Cédex (FR)

**Respondent:**  
(Proprietor of the patent)

HAYNES INTERNATIONAL, INC.  
1020 West Park Avenue  
P.O. Box 9013  
Kokomo  
Indiana 46904-9013 (US)

**Representative:**

Attfield, Donald James  
Barker Brettell  
138 Hagley Road  
Edgbaston  
Birmingham B16 9PW (GB)

**Party as of right:**  
(Opponent 01)

AGA Aktiebolag  
S-181 81 Lidingö (SE)

**Representative:**

Berglund, Stefan  
Bjerkéns Patentbyrå KB  
Östermalmsgatan 58  
S-114 50 Stockholm (SE)

**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted 6 April 1998  
rejecting the opposition filed against European  
patent No. 0 494 521 pursuant to Article 102(2)  
EPC.**

**Composition of the Board:**

**Chairman:** P. Alting van Geusau  
**Members:** H. Meinders  
M.-B. Tardo-Dino

## Summary of Facts and Submissions

- I. The appeal is from the decision of the Opposition Division announced 20 March 1998 and sent in written form to the parties on 6 April 1998, rejecting the opposition against European Patent No. 0 494 521.

The independent claims 1 and 4 of the patent in suit read as follows:

"1. A shielding gas mixture suitable for use in arc welding and consisting of argon, helium, carbon dioxide, plus usual impurities characterised in that the mixture contains, in percent by volume, 5 to 13 % helium, 0.1 to 0.9 % carbon dioxide and the balance argon plus impurities."

"4. A process for welding superalloys of the type in which a shielding gas is provided and surrounds an electric arc during welding, wherein carbon dioxide, helium, argon plus usual impurities are mixed to provide a shielding gas, characterised in that the mixture contains, in percent by volume, 0.1 to 0.9% carbon dioxide, 5 to 13% helium and the balance argon plus impurities."

- II. Against this decision an appeal was filed by the Appellant (Opponent 02) by fax on 3 June 1998, with payment of the appeal fee and submission of the statement of grounds of appeal on that same day.
- III. In preparation for oral proceedings auxiliarily requested by both the Appellant and the Patent Proprietor (Respondent) the Board, in its annex to the summons to oral proceedings, addressed the question of

sufficiency of disclosure of the invention claimed.

IV. Oral proceedings were held on 15 January 2002, in the absence of the parties, the Appellant having withdrawn its request for oral proceedings, the Respondent having notified the Board it would not attend.

V. The arguments of the Appellant in support of its request for revocation of the patent in its entirety can be summarised as follows:

The ranges chosen in the claims were arbitrary and did not contribute to solving a technical problem, because there was no additional advantage in respect of the state of the art. If the ranges claimed should be a real selection providing unforeseen advantages, this was not disclosed in the patent. This was illustrated by the fact that the patent stated that there was a need for the helium content to be at least 10% (column 8, lines 34, 35) and the available tests only involved between 9 and about 10 vol.% helium, whereas the claim extended over a much wider range, namely from 5 to 13 vol.%.

The objection therefore was that the patent did not disclose the invention in such a way that it could be performed over the whole range claimed (see T 409/91, OJ EPO 1994, 653).

The Appellant further argued that the subject-matter of claims 1 and 4 were not novel nor did they involve inventive step.

VI. The Respondent (Patentee) requested dismissal of the appeal. It did not argue in respect of sufficiency of

disclosure but only countered the Appellant's submissions on novelty and inventive step.

VII. The party as of right (Opponent 01) did not file any requests or submissions in appeal.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Extent of examination in appeal*

During the oral proceedings before the Opposition Division the Appellant limited its request for revocation of the patent to only the subject-matter of claims 1 to 4 as granted. The decision under appeal as well as the minutes of the oral proceedings mention this fact.

Now on appeal the Appellant requests revocation of the patent in its entirety (see last page of his statement of grounds of appeal).

The question whether this is admissible needs no further consideration by the Board in view of its findings, which follow below, regarding the subject-matter of claim 4. This claim is under attack on both accounts.

3. *Sufficiency of disclosure (Article 83 EPC)*

- 3.1 The Appellant had raised the ground of opposition pursuant to Article 100(b) EPC by crossing the appropriate box on EPO Form 2300 and by including

reasons on this point in its notice of opposition, page 2. The argumentation used was repeated by the Appellant in its statement of grounds of appeal.

The Opposition Division not having treated this ground of opposition in its rejection of the opposition, the Board put the question to the parties whether the case should be remitted to the Opposition Division for a decision on this matter or whether the Board should make use of its powers pursuant to Article 111(1) EPC to decide itself on this issue. The Board considered the latter to be feasible. Only the Appellant responded to this invitation, expressing no particular preference, but indicating that the conclusions drawn in decision T 409/91 (*supra*) should be applied in their entirety if the Board were to decide itself.

Since the Respondent has not reacted to the invitation of the Board and the matter is straightforward, the Board considers it appropriate to make use of its power pursuant to Article 111(1) EPC and decide itself on this matter.

- 3.2 According to Article 83 EPC the disclosure of the invention in the patent must be sufficiently clear and complete for it to be carried out by the skilled person.

In contrast to claim 1, which relates to a shielding gas mixture on its own, the invention as defined by the further independent claim 4 as granted relates to a process for electric arc welding superalloys in which a shielding gas is used having 0.1 to 0.9 vol.% carbon dioxide, 5 to 13 vol.% helium and the balance argon plus impurities.

3.3 The patent discloses three trials with different gas compositions used for arc welding of a Haynes 242 superalloy, which lie within the range claimed in claim 4, i.e (percentages are in volume percent):

Trial 4: 90.75% Ar, 9% He and 0.25% CO<sub>2</sub>,

Mix A: 89.05% Ar, 10.5% He and 0.55 CO<sub>2</sub>,

Mix B: 90.01% Ar, 10.74 He and 0.25 CO<sub>2</sub> (see column 5, line 10 to column 6, line 25).

All gas compositions provided improved bead appearance by reducing the degree of oxidation, with no significant impairment of weldability. The quantity of helium showed little or no improvement in welding characteristics when above about 10% vol.%.

Similar results were achieved with other superalloys (nickel based and cobalt based) and on work with dissimilar welds between carbon steel and stainless steel to various nickel-based alloys (column 6, lines 26 to 41).

3.4 The object of the invention as claimed in claim 4 is thus related to providing arc stability, good weldability, improved bead profile and -appearance and a minimum cost of the gas when arc welding superalloys (see column 8, lines 13 to 33 of the patent in suit). In view of the embodiments and trials described in the patent in suit the Board is satisfied that this object is achieved with the percentage of helium in the shielding gas being between 9 and 13 vol.%.

However, the Board observes that the patent in suit

clearly states that there is a need for a **minimum** of about 10 vol.% helium, see column 8, lines 34 and 35. This is further illustrated by the fact that it does not disclose embodiments of the process of claim 4 in which the volume of helium in the shielding gas is in the range between 5 and 9 vol.%.

The Board therefore has to conclude that the above mentioned object cannot be obtained with the process for arc welding superalloys according to claim 4 using a shielding gas in which the helium content is in the range between 5 and 9 vol.%. The skilled person is therefore not put in a position to carry out the process of claim 4 over the entire range claimed (see T 409/91, *supra*). The invention as defined by this claim therefore does not fulfil the requirements of Article 83 EPC and therefore the patent cannot be upheld with this claim.

- 3.5 Since the request of the Respondent for maintenance of the patent as granted cannot be allowed for the reasons mentioned above, in the absence of further requests the patent has to be revoked because the Board can only decide upon the patent in the text submitted to it, or agreed, by the proprietor of the patent (Article 113(2) EPC).

## **Order**

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

1. The decision under appeal is set aside.



2. The patent is revoked.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau