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**Datasheet for the decision  
of 14 July 2016**

**Case Number:** T 1888/15 - 3.2.08

**Application Number:** 10009922.5

**Publication Number:** 2305842

**IPC:** C22C1/03, C22C14/00, B22F1/00

**Language of the proceedings:** EN

**Title of invention:**  
Method of making and using formed articles including master alloy

**Applicant:**  
ATI Properties, Inc.

**Headword:**

**Relevant legal provisions:**  
EPC Art. 56, 123(2), 76(1), 84

**Keyword:**  
Inventive step (yes, after amendment)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 1888/15 - 3.2.08

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.08**  
**of 14 July 2016**

**Appellant:** ATI Properties, Inc.  
(Applicant) 1600 N.E. Old Salem Road,  
P.O. Box 460  
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**Representative:** Potter Clarkson LLP  
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**Decision under appeal:** **Decision of the Examining Division of the European Patent Office posted on 9 March 2015 refusing European patent application No. 10009922.5 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairwoman** P. Acton  
**Members:** M. Alvazzi Delfrate  
D. T. Keeling

## Summary of Facts and Submissions

- I. By its decision posted on 9 March 2015 the examining division refused European patent application No. 10009922.5

The examining division was of the view that both the requests then on file did not comply with the requirements of Article 123(2) EPC or Article 84 EPC and related to subject-matter which did not involve an inventive step starting from each of

D2: US -A- 3,768,999 and

D10: US -A- 4,108,637.

- II. The appellant (applicant) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.

- III. Following a telephone conversation with the Rapporteur on 21 June 2016 the appellant requested in the letter of 6 July 2016 that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed with said letter. Oral proceedings were requested as a precautionary measure.

- IV. Claim 1 of the main request reads as follows:

"1. A method of making a titanium alloy, the method comprising:

providing a homogenous mixture comprising solid titanium raw feed material, the solid raw feed material being used in preparing a metal melt, where "metal melt" refers to a melt of a metal and, optionally, metal and non-metal alloying additives that is subsequently solidified into an alloy, and a quantity of formed articles, the formed articles comprising a

predetermined quantity of a master alloy consisting of titanium dioxide particles, wherein the formed articles comprise particles of the master alloy bound together by at least one organic polymer binder that decomposes at a predetermined temperature that is greater than 260°C (500°F) and releases the particles of master alloy and wherein the formed articles comprise 5% to 60% by weight of the at least one organic polymer binder; and  
heating the mixture at a temperature above the predetermined temperature to melt the solid raw feed material and release the particles of the master alloy in the formed articles and prepare a melt;  
wherein the solid raw feed material and the formed articles are mixed prior to melting of the solid raw feed material; and  
subsequently solidifying the mixture of melted raw feed materials and master alloy to form an alloy having a desired chemistry."

### **Reasons for the Decision**

1. Main request - Articles 123(2) and 76 EPC
- 1.1 Claim 1 as amended in appeal is based on originally filed claim 1, clauses 14, 16, 25, 29, 31 and 37 of paragraph [0025] and paragraphs [0021] and [0023] or examples 1 and 2. In particular, paragraphs [0021] and [0023] and examples 1 and 2 disclose a master alloy consisting of titanium dioxide particles. Therefore, the requirements of Article 123(2) EPC are satisfied.

1.2 Since a basis for claim 1 is also to be found in the corresponding passages in the parent application, the requirements of Article 76(1) EPC are likewise satisfied.

2. Main request - Clarity

2.1 Although an alloy does not normally consist of oxide particles, the definition of master alloy in claim 1 ("master alloy consisting of titanium dioxide particles") leaves no ambiguity as to the nature of the "master alloy" used in the claimed method. Therefore, claim 1 complies also with the requirements of Article 84 EPC.

3. Main request inventive step

Claim 1 as amended in appeal relates to a method of making a titanium alloy. As acknowledged in the application it was known in the art to add powdered titanium dioxide to titanium solid raw material in order to alloy titanium with oxygen (see paragraphs [0005] to [0007] of the A-publication). Such a process is mentioned for instance in US 3,433,626, column 1, lines 23-26. In the prior art processes the addition of titanium oxide can be done either by compacting titanium sponge and titanium dioxide powder into a pellet (see paragraph [0005] of the A-publication) or by adding loose titanium dioxide powder (see paragraph [0006] of the A-publication).

Each of these prior art methods can be considered as the closest prior art.

By contrast documents D2 and D10, which were considered as starting points for assessing inventive step in the appealed decision (dealing with different claims), are less relevant, since they both deal with the addition of a master alloy to a melt and do not disclose the production of a titanium alloy or the use of a "master alloy" comprising or consisting of titanium dioxide.

The closest prior art methods present some drawbacks, notably the time required for preparing the pellets or inconsistent results obtained by using the loose powder (paragraphs [0005] to [0007]). The problem solved by the claimed invention is to overcome these drawbacks.

This problem is solved by the method of claim 1, according to which the Ti oxide is provided by means of formed articles, comprising particles of the Ti oxide bound together by at least one organic polymer binder that decomposes at a temperature greater than 260°C and releases the particles of master alloy and wherein the formed articles comprise 5% to 60% by weight of the at least one organic polymer binder.

The claimed solution is not rendered obvious by the prior art.

In particular D2 and D10 relate to different alloys and alloying elements and teach a different way of providing said alloying elements, namely as a wire added directly to the melt.

Therefore, the subject-matter of claim 1 involves an inventive step.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a patent on the basis of:
  - claims 1-10 filed with letter of 6 July 2016;
  - description pages 1-20 filed with letter of 6 July 2016; and
  - Figures 1-5 as published.

The Registrar:

The Chairwoman:



C. Moser

P. Acton

Decision electronically authenticated