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**Datasheet for the decision
of 20 January 2015**

Case Number: T 0285/13 - 3.2.08
Application Number: 06748700.9
Publication Number: 1874972
IPC: C22C32/00, C22C33/02, B22F3/10,
C22C1/04, C22C1/05, C22C26/00
Language of the proceedings: EN

Title of invention:

INTERMETALLIC BONDED DIAMOND COMPOSITE COMPOSITION AND METHODS
OF FORMING ARTICLES FROM SAME

Applicant:

THE BOARD OF TRUSTEES OF SOUTHERN ILLINOIS
UNIVERSITY

Headword:

Relevant legal provisions:

EPC Art. 54
RPBA Art. 13(1)

Keyword:

Novelty (main request and auxiliary request 1 to 13 -no)
Late-filed auxiliary requests - admitted (no)

Decisions cited:

Catchword:



**Beschwerdekammern
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Chambres de recours**

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Case Number: T 0285/13 - 3.2.08

**D E C I S I O N
of Technical Board of Appeal 3.2.08
of 20 January 2015**

Appellant: THE BOARD OF TRUSTEES OF SOUTHERN ILLINOIS
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 27 July 2012
refusing European patent application No.
06748700.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman T. Kriner
Members: M. Alvazzi Delfrate
I. Beckedorf

Summary of Facts and Submissions

- I. By its decision posted on 27 July 2012 the examining division refused European patent application No. 06748700.9
- II. The appellant (applicant) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.
- III. Oral proceedings before the Board of appeal were held on 20 January 2015.
- IV. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the main request or one of auxiliary requests 1 to 13, all filed with letter of 18 December 2014 or in the alternative on the basis of one of auxiliary requests 14 to 27, all filed at the oral proceedings before the Board of Appeal.
- V. Claim 1 of the **main request** reads as follows:

"An intermetallic bonded diamond composite composition comprising:
(1) a binder consisting of nickel aluminide (Ni_3Al); and
(2) diamond particles dispersed within the binder."

Claim 1 of **auxiliary requests 1, 2, 4 to 6, 8 to 9 and 11 to 12** corresponds to claim 1 of the main request.

Claim 1 of **auxiliary requests 3, 7, 10 and 13** differs from claim 1 of the main request by the addition of the wording

"wherein the diamond particles comprise between 0.5% and 80% by volume of the composition."

Auxiliary requests 14 to 27 correspond to respectively the main request and auxiliary requests 1 to 13 save for the replacement in claim 1 of the wording "a binder consisting of nickel aluminide (Ni_3Al)" with the wording

"a binder consisting of Ni_3Al nickel aluminide".

VI. The following document played a role for the present decision:

D5: US -A- 5 608 911.

VII. The appellant's arguments can be summarised as follows:

Main request and auxiliary requests 1 to 13

In D5 the binder was composite material containing different phases produced by a self-propagating reaction. Hence, when this document used the expression Ni_3Al it did not refer to the intermetallic phase Ni_3Al , but rather to a composition of different phases comprising Ni and Al in total amounts corresponding to Ni_3Al .

By contrast the application used the expression Ni_3Al in the correct way, for instance in paragraph [0033] which disclosed that only this phase constituted the binder. Hence, the use of this term in the claim, albeit in parenthesis made clear to the person skilled in the art that no other phases were present in the binder of the product of claim 1 of the main request. Accordingly, the subject-matter of this claim was novel.

For the same reasons this applied to the subject-matter of claim 1 of each of auxiliary requests 1 to 13.

Auxiliary requests 14 to 27

Auxiliary requests 14 to 27 corresponded to the requests already on file save for the clarification of the feature that established novelty over D5, namely the fact that the binder consisted of a pure Ni₃Al phase. Since this was the argument which had been consistently used in the proceedings these requests did not constitute a new case and should be admitted into the proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. Main request
 - 2.1 D5 relates to a controlled temperature reactive sintering process for producing finely divided intermetallic and ceramic powders, particularly nickel aluminide powders, and to the use of these powders as binders for cutting tools (column 1, lines 11 to 16). The elemental starting materials for the controlled temperature reactive sintering process are mixed in the proper stoichiometric ratio to form the proper compound, e.g., Ni₃Al or Ni₆₅Al₃₅, which can then be milled into powders (column 3, lines 38 to 47). In an embodiment nickel aluminide powder corresponding to the composition Ni₃Al are combined with diamond powder and then processed by means of hot pressing or hot

isostatic pressing to form a fully dense composite nickel aluminide-diamond structure (column 8, line 65 to column 9, line 2). Accordingly, D5 discloses an intermetallic bonded diamond composite composition comprising a binder consisting of nickel aluminide and diamond particles dispersed within the binder.

2.2 It is true that according to D5 the intermetallic binder which is the product of the self-propagating reaction may be a composite material containing different phases depending on the equilibrium phase diagram of the material, so that as an example nickel and aluminum powders mixed in the stoichiometric blend will not result solely in a stoichiometric pure phase but also comprise further intermetallic phases (column 7, lines 43 to 48).

However, the Board does not concur with the appellant's view that claim 1 is restricted to a binder consisting solely of a pure phase Ni_3Al , thus excluding this type of binder, because in the claim the expression " Ni_3Al " is present in parenthesis, so that it does not limit the claimed scope.

Moreover, even if this expression were to be considered for defining the claimed scope, it would not provide a distinctive feature in view of D5, since it does not limit the binder to a pure stoichiometric phase. As a matter of fact this limitation is not to be found in the description either, because the description merely refers to a nickel aluminide (Ni_3Al) binder without giving any detail as to its phase composition or its production method. In particular paragraph [0033] mentioned by the appellant does not refer to any phase analysis but merely to the SEM micrographs shown in Figures 3 and 4 from which the presence of some

intermetallic non-stoichiometric phase cannot be excluded.

Therefore, no difference can be seen between the product of claim 1 and the composition disclosed in D5. Accordingly, the subject-matter of claim 1 of the main request lacks novelty.

3. Auxiliary requests 1 to 13

D5 discloses that the Ni₃Al composition in the form of a powder can be mixed with diamond powder which represents up to 20 weight percent of the total mixture (column 9, lines 16 to 21), i.e. an amount comprised in the range between 0.5% and 80% by volume of the composition. Therefore, the subject-matter of claim 1 of auxiliary requests 1 to 13 also lacks novelty in view of D5.

4. Auxiliary requests 14 to 27

Auxiliary requests 14 to 27 have been submitted at the oral proceedings before the Board of Appeal. Accordingly, their admission into the proceedings is at the Board's discretion, which is to be exercised in view of inter alia the complexity of the new subject matter submitted, the current state of the proceedings and the need for procedural economy (Article 13(1) RPBA).

These auxiliary requests have been submitted at an extremely advanced stage of the proceedings, although the Board had already pointed out in its communication annexed to the summons to oral proceedings that claim 1 of the main request does not specify whether the nickel aluminide consists solely of the phase Ni₃Al,

since this expression is indicated in parenthesis and without specifying whether merely a stoichiometric composition as in D5 or the phase composition is meant (see point 4.1 of communication of 17 July 2014). Moreover, for the reasons explained above, the wording "a binder consisting of Ni₃Al nickel aluminide" fails to establish novelty over D5 because it does not exclude the presence of some intermetallic non-stoichiometric phase. Accordingly, auxiliary requests 14 to 27 are *prima facie* not allowable and their admission cannot be conducive to the need for procedural economy.

Under these circumstances, the Board decided not to admit these auxiliary requests into the proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



V. Commare

T. Kriner

Decision electronically authenticated