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D E C I S I O N
of 16 June 1998

Case Number: T 0699/95 - 3.2.2

Application Number: 90903582.6

Publication Number: 0458865

IPC: C22C 1/09

Language of the proceedings: EN

Title of invention:

Shaped bodies containing short inorganic fibers

Applicant:

Technical Ceramics Laboratories, Inc.

Opponent:

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Headword:

-

Relevant legal provisions:

EPC Art. 109, 111(1)

Keyword:

"Claims/substantially amended filed with grounds of appeal"
"Remittal to Examining Division"

Decisions cited:

T 0063/86, T 0139/87, T 0047/90

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0699/95 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of -16 June 1998

Appellant: Technical Ceramics Laboratories, Inc.
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Representative: Johnson, Terence Leslie
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 6 March 1995
refusing European patent application
No. 90 903 582.6 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: W. D. Weiß
Members: R. Ries
C. Holtz

Summary of Facts and Submissions

- I. European patent application No. 90 903 582.6 (publication No. WO 90/09461) was refused by the Examining Division.

- II. The decision of refusal was based on a the set of claims 1 to 37 filed with the appellant's letter of 9 June 1994 (main request) and of a first, second and third auxiliary requests submitted during the oral proceedings. Each of these requests was governed by two independent product claims 1 and 25 directed to "a shaped body" and " a metal matrix composite", respectively.

The reasons for the refusal were that the subject matter of claim 1 of the main and of the auxiliary requests lacked novelty with respect to document D2 EP-A-0223 478 under of Articles 52(1) and 54 EPC, because all the technical features of claim 1 of the main and auxiliary requests were either explicitly or implicitly disclosed in document D2.

The Examining Division found that, even in the case that the novelty of the subject matter of claim 1 had been recognised, the subject matter of claim 1 did not involve an inventive step, when further considering documents D1 EP-A-0213 615 (cf. item 3.1.1. paragraph of the decision) and D3 EP-A-0170 396 (cf. Minutes dated 13 January 1995).

Under item 6, the decision under appeal remarked the following: Neither the application nor the Proprietor had indicated any specific process or other features being related to the random orientation or angular range of 30 to 60° claimed for the fibres. In addition,

the terms "high shear mixing" and "low pressure injection molding" did not have a meaning precise enough to distinguish from the prior art the process for making the claimed products.

- III. The appellant lodged an appeal against the decision of the Examining Division. He requested that the decision of the Examining Division be set aside and an interlocutory revision pursuant to Article 109 EPC be carried out. In his statement of grounds he requested that the claims on file be deleted and, as a main request, be replaced by an amended set of claims 1 to 27 (annex B) or, as a first auxiliary request, with an amended set of claims 1 to 26 (annex C) or, as a second auxiliary request, with an amended set of claims 1 to 26 (annex D).

Claim 1 of the main request (annex B) reads as follows:

"1. A method for forming a shaped body containing short inorganic fibres dispersed throughout the body with the fibres oriented substantially randomly in three dimensions comprising the steps of:

- (a) providing a mass of short inorganic fibres;
- (b) providing a mass of hot thermoplastic compound which is heated to a fluid state;
- (c) adding the short inorganic fibres into the heated thermoplastic compound to provide a mix having from 10 to 40 % by volume of fiber;
- (d) adding additional organic ingredients to the fiber containing compound to thereby form a moldable mixture;

- (e) subjecting the moldable mixture from step (d) to high shear mixing to thereby provide a dispersion of the fibres throughout the mixture with the fibres oriented substantially randomly in three dimensions with the angular deviation of the fibres ranging from 30° to 60°;
- (f) providing a mold defining a predetermined shaped cavity;
- (g) introducing the molten moldable mixture from step (e) into said mold and cooling the mixture while maintaining the high degree of three-dimensional random orientation of the fibres; and
- (h) removing the cooled molded or shaped mixture from the mold and extracting at least 95% by volume of the organic material to thereby provide a shaped preform of fibres having sufficient strength to allow handling of the preform.

Claim 1 of the first auxiliary request (annex C) includes the additional feature that the mixture of step (d) is subjected to high sheer mixing "for a period of at least 30 minutes".

Claim 1 of the second auxiliary request (annex D) includes the additional feature that the mixture of step (g) is injected into a mold with a pressure of about 0.7031 to about 10.55 kg/cm³.

In his conclusions the appellant submitted that by the amended claims all the substantial objections underlying the contested decision had been overcome and that an interlocutory revision of the same pursuant to

Article 109 should be carried out, in particular in following the decision T 139/87 (OJ EPO 1990, 68) and the Guidelines for Examination in the EPO, Part E-XI, 7.

- IV. In support of the admissibility of the amended claims, the appellant emphasized that the amended claims were directed to a "method for forming a shaped body" rather than to a "shaped body" per se, as does the rejected set of product claims. The amended method claim 1 of the main request and of all the subsidiary requests called for providing a mass of hot thermoplastic compound heated to a fluid state and adding the short inorganic fibres to provide a mix having from 10 to 40 % by volume of fibres, these steps being unknown from any of the documents D1 to D3.

In this context, the appellant noted that the process claims of annex B had already been the subject of an examination by an EPO examiner during Chapter II of the PCT application, and were found to be novel and inventive (claims 40 to 57; 59 to 78 of the substitute sheets 40 to 46). The relevant passage of the preliminary Search Report referred to by the Appellant reads as follows:

"4. There is no suggestion in the prior art to make a shaped inorganic fibre body by adding a thermoplastic compound to make a moldable mix and then extracting the organic material to leave the preform."

Reasons for the Decision

1. The appeal is admissible.
2. The procedure before the Examining Division was based on claims which were directed to a product, i.e. a "shaped body" or to a "metal matrix composite", respectively. Hence, also the decision under appeal was based on the assessment of the novelty of, and the inventive step involved by, the subject matter of "product claims".
3. With his statement of grounds of appeal, the appellant requested that the product claims on which the decision was based be replaced by amended claims 1 to 27 directed to a "method for forming a shaped body" and to a "method for making a metal matrix composite". As alternatives, a first auxiliary request (method claims 1 to 26) and a second auxiliary request (method claims 1 to 26) were submitted.

3.1 Admissibility:

Claim 1 of the main request originates from claim 46 as filed in combination with originally filed claims 31, 82, 84 and page 26, lines 22 to 24 of the description as filed, specifying the angular deviation of fibres ranging from 30° to 60° now featuring in step (e). Dependent claims 2 to 18 and 19 correspond to original claims 47 to 63 and to claim 83, respectively. New claims 20 to 27 are based on claims 65 to 70, 73 and 76.

Claim 1 of the first auxiliary request differs from claim 1 of the main request by step (e) including the feature "for a period of at least 30 minutes", which finds support in claim 71 as originally filed.

Claim 1 of the second alternative request differs from Claim 1 of the main request by step (g) including the technical feature "injecting the moldable mixture from step (e) into the mold with a pressure from about 0.7031 to about 10.55 kg/cm²" which is supported by claim 54 as originally filed.

Consequently, the claims of the main, first and second auxiliary requests are admissible with regard to Article 123(2) EPC.

3.2 Novelty:

Although the process for making a metal matrix composite (MMC) according to document D2 provides that a binder used to produce the preform may be an inorganic binder or an organic binder or a mixture thereof within amounts up to 50% by volume and, although D2 specifically discloses that the binder is incorporated in an (aqueous) slurry, this document fails to disclose a high shear mixing of the short inorganic fibres in a mass of hot thermoplastic compound and organic ingredients as defined by steps (a) to (e) of claim 1 of all requests. Moreover, according to the paragraph relating to the "Preparation of the Preform" on page 6 of D2, the fibres are randomly oriented two-dimensionally in a plane rather than three-dimensionally as claimed in claim 1.

Document D1 discloses a method of producing a preform in which the individual silicon carbide whiskers are substantially randomly oriented in three dimensions by compression forming. The process disclosed in D1 is, however, carried out without using any binder (cf. e.g. on page 23, second paragraph). As in document D2, the concept of "high shear mixing the moldable mixture composed of a hot thermoplastic compound in a fluid state, short inorganic fibres and an additional organic

compound" defined in step (e) of claim 1 to establish a very high degree of random orientation of the fibres in three dimensions is not disclosed in document D1.

The method disclosed in document D3 comprises the steps of mixing short inorganic fibres with an aqueous solution of a high polymer binder, charging the mixed solution on a water absorbent form having a cavity of a predetermined shape and soaking it for drying and removal of the binder (cf. page 3, line 12 bridging page 4, line 16; example on page 6). Thus, also document D3 fails to disclose at least the process step of high shear mixing short inorganic fibres in thermoplastic moldable mass as specified in steps (b) to (e) defined in claim 1 of all requests.

Hence, the method forming the subject matter of claim 1 of the main request, the first and second auxiliary requests is clearly distinguished from the teaching of documents D1 to D3 and, therefore, novel with respect to this prior art.

4. In paragraph 6 of the decision, the Examining Division refers to possibly novel and inventive features in the rest of the application, including technical process features like "high shear mixing" and "low pressure injection molding". These process features, however, were not regarded as being sufficiently clear and precise to differentiate the process described in the application (page 29) from the prior art. These statements of the decision under appeal, however, are too general and not sufficiently complete and exhaustive to do justice to the sequence of process steps defining the method now claimed and to permit the Board to assess whether the Examining Division would have considered the subject matter of the present method claims as being clear and as involving an inventive step in the meaning of Articles 84 and 56

EPC, respectively. In this connection, it should be taken into account that according to the International Preliminary Examination Report on PCT/CA90/00046, the process forming the subject matter of the originally filed claims 40 to 57 and 59 to 78 which essentially correspond to method claim 1 of the Appellant's requests were rated as being novel and inventive with respect to the cited prior art. According to this report, no suggestion was found in the prior art to make a shaped inorganic fibre body by adding a thermoplastic compound to make a mouldable mix and the extracting the organic material to leave the preform.

5. Therefore, in the Board's judgement, the claims proposed by the appellant having been substantially amended, the requests on file require a further examination as to their merits in relation to the requirements of the EPC, including issues on which the Examining Division has not yet expressed a reasoned and complete opinion. These issues are:

- whether the claims are clear in the meaning of Article 84 EPC;
- whether the claimed method involves an inventive step with respect to the prior art.

As stated in Decision T 63/86 (OJ EPO 1988, page 224), such further examination should be carried out by the Examining Division as the first instance after the Examining Division has itself exercised its discretion under Rule 86(3) EPC (see paragraph 2 of the cited decision).

6. Given this situation and in order not to deprive the Appellant of the right to have his case decided on these issues by two instances and taking also into account that the essential function of appeal

proceedings is to determine whether a decision at first instance was correct on its merits rather than to provide a continuation of first instance proceedings, the Board deems it appropriate to exercise its power under Article 111(1) EPC and to remit the case to the Examining Division for further prosecution; see also published decision T 47/90 (OJ EPO 1991, 486), points 3 to 5 of the reasons.

7. In the Board's judgement, the Examining Division should have in the present circumstances rectified its decision under Article 109(1) EPC and proceeded to the interlocutory revision expressly requested by the Appellant in his statement of the grounds of appeal. The reasons for the refusal were based on an assessment of novelty and inventive step of the subject-matter of product claims. The reasons expressly did not take into account the question of the novelty and obviousness of the method for producing such a product.

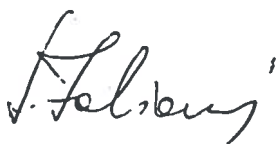
Consequently, the reasons for the refusal did no longer apply to the subject matter of the amended claims filed with Appellant's statement of grounds, in replacement of the claims on which the refusal was based; see also published decision T 139/87 (supra), points 3 and 4 of the reasons.

Order

For these reasons it is decided that:

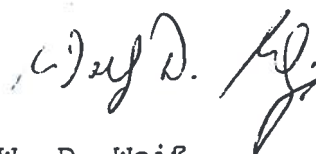
1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further prosecution on the basis of the requests filed by the Appellant with his statement of the grounds of appeal dated 17 July 1995.

The Registrar:



S. Fabiani

The Chairman:



W. D. Weiß

R. R.