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D E C I S I O N
of 23 June 1998

Case Number: T 0839/95 - 3.3.5

Application Number: 90107205.8

Publication Number: 0390223

IPC: C03C 13/00

Language of the proceedings: EN

Title of invention:

High temperature and alkali-resistant refractory fiber for
reinforcing cementitious products

Applicant:

The Morgan Crucible Company PLC

Opponent:

-

Headword:

Refractory fibres/MORGAN

Relevant legal provisions:

EPC Art. 54

Keyword:

"Novelty (no)"

Decisions cited:

T 0026/85, T 0666/89, T 0089/90, G 0010/93

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0839/95 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 23 June 1998

Appellant:

The Morgan Crucible Company
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Representative:

Boff, James Charles
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Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office posted 24 July 1995
pursuant to Article 106(3) EPC.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: M. M. Eberhard
R. E. Teschemacher

Summary of Facts and Submissions

- I. European patent application No. 90 107 205.8 is a divisional application of the parent European patent application No. 84 901 876.7 (international application number PCT/US84/00590). By an interlocutory decision the Examining Division decided that the invention defined in amended claims 1 and 2 according to the third auxiliary request filed on 9 June 1995 met the requirements of the EPC and rejected the amended claims according to the main request and the first and second auxiliary requests, all submitted on 9 June 1995.

- II. The grounds for the refusal of the main request were that the subject-matter of claim 1 lacked novelty over the disclosure of US-A-2 873 197 (hereinafter D3). The Examining Division took the view that point J disclosed in Table 1 of D3 corresponded to a fibre composition falling within the claimed ranges. The fibres having the composition of point J were assumed to exhibit the property indicated in claim 1 in the absence of any evidence to the contrary. The first and the second auxiliary requests were rejected on the grounds that claim 1 of each of these requests did not meet the requirement of clarity set out in Article 84 EPC.

- III. The Appellant lodged an appeal against this interlocutory decision to the extent that it concerned the main request and the first and second auxiliary requests. In a communication from the Board, the question was raised whether claim 1 of each of these requests met the requirements of Article 76 EPC taking into account that the shrinkage resistance test defined in these claims differed from the test indicated in the parent application. Oral proceedings were held on 23 June 1998. At the oral proceedings the Appellant

submitted amended claims 1 and 2 as a main request in replacement of all the previous requests filed in the appeal proceedings. Claim 1 of this request reads as follows:

"1. A high temperature refractory glass fiber, said fiber in blanket form exhibiting superior shrinkage resistance of less than 11.5% when subjected to 1482°C (2700°F) for four hours, said refractory fiber having a composition consisting of in percent by weight:

SiO ₂	46-52%
Al ₂ O ₃	32-38%
ZrO ₂	13-18%

and having a silica to zirconia ratio in the range of from 2.6 to 3.8."

IV. The Appellant's arguments as regards the novelty of claim 1 can be summarised as follows:

Point J as defined in D3 did not correspond to a composition that was actually made and tested, therefore D3 did not disclose a fibre composition at this point. Point J was a theoretical point which was introduced in the three-component diagram in order to define a polygon EFHJK within which preferred compositions lay. It had no technical or scientific significance whatsoever. The Examining Division failed to distinguish between purely intellectual content (point J) and technical content, as established by T 181/82 (OJ EPO 1984, 401). The principle stated in T 77/87 (OJ EPO 1990, 280) that a skilled person is interested in technical reality was general and not limited to matter erroneously disclosed in a prior art.

Disclosure of a range for the sake of marking out an area did not specifically exemplify any points within the range unless these points have been scientifically investigated by way of example. The boundaries of the preferred area could have been drawn in very different ways in D3, for example as a parallelogram, a triangle or a circle. Although the skilled person could (with much effort and after many attempts) have made fibres in **strict** accordance with composition J, he would not have seriously contemplated producing such fibres, since it was five times as likely as not that attempting to meet the **exact** amounts of components would have resulted in a fibre outside the preferred range. Furthermore, there was no clear teaching to the skilled person to practise at point J since he would not have seriously contemplated success in achieving the beneficial results of the preferred range of region EFHJK. This region encompassed compositions 5, 6 and 7 which gave a high yield of fibre. All of the compositions made included 2% borax glass except compositions 11 and 12, one of which did not produce fibre and the other of which produced coarse fibre with no yield given. The skilled person was interested in success and would have attempted to work **within** the most preferred range where the highest chance of producing workable fibre was given, and not in a virgin area which had not yet been explored. He would have been dissuaded from contemplating attempting to make a fibre without a borax addition. The Appellant referred in this context to decisions T 666/89 (OJ EPO 1993, 495) and T 26/85 (OJ EPO 1990, 22).

The Examining Division's statement that European patent practice treated endpoints of a range as being specific individual disclosures was not relevant to the present issue where one was not considering the endpoint of a linear range of values but a point in a broad area of values. It further constituted a legal fiction divorced

from fact. Decision T 26/85 was misinterpreted since it clearly discussed the concept of a document "teaching away" from an endpoint and gave no special weight to the value of the endpoint.

In reply to the question from the Board whether or not in the case of composition J some specific process features had to be observed in order to arrive at a glass fibre having the desired shrinkage resistance, the Appellant confirmed at the oral proceedings that if someone had chosen to make a fibre having the composition of point J by any conventional fiberising technique, then a glass fibre having the desired shrinkage characteristics would have been obtained.

- V. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 and 2 according to the main request submitted at the oral proceedings.

Reasons for the Decision

1. The Examining Division has not taken a final decision as provided for in Article 97 EPC (Refusal of the application or grant of the patent). Instead, it has chosen to issue a decision indicated as an interlocutory decision under Article 106(3) EPC rejecting the main and two auxiliary requests and stating that the invention claimed according to the third auxiliary request was found to meet the requirements of the Convention. An interlocutory decision in the case of an allowable auxiliary request is foreseen in the instructions to examiners only for auxiliary requests in opposition proceedings

(Guidelines for Examination in the EPO, D-VI, 7.2.2).
The Board does not consider it appropriate for the department of the first instance to proceed in the same way in grant proceedings.

1.1 The purpose of the interlocutory decision in opposition proceedings is intended to save the proprietor the further cost of fulfilling the formal requirements under Rule 58(5) EPC before there is a final decision on the version in which the patent can be maintained (T 89/90, OJ EPO 1992, 456). A corresponding situation does not exist in grant proceedings because there is no adverse party who may object to the version to which the applicant has agreed.

1.2 Furthermore, the principle of examination *ex officio* applies in *ex parte* appeal proceedings with the consequence that the Board is restricted neither to the grounds for the contested decision nor to the facts and evidence on which the decision is based (G 10/93, OJ EPO 1995, 172, Reasons 3). Any new objection which the Board may raise against a version which the Examining Division considered as not allowable may also apply to a version which the Examining Division considered as allowable. Therefore, it seems premature if the Examining Division decides that a version meets the requirements of the Convention although an appeal has to be envisaged in consequence of the rejection of other requests. This applies in a corresponding manner if the Examining Division becomes aware of circumstances rendering non-patentable the claimed subject-matter during further examination after a remittal of the case by the Board of Appeal. In both situations there is no reason to give a decision on a part of the claimed subject-matter although there is always the possibility that further examination reveals the need for further objections. As long as the

Applicant keeps the grant procedure pending there is a public interest in the fact that the possibility of making valid objections is maintained for the whole subject-matter covered by the application.

- 1.3 Third parties may furthermore raise objections concerning the patentability of an invention under Article 115 EPC. It seems legitimate that such objections are taken into account as long as the substantive examination of the application is not finished. If a final decision on part of the application is taken before that stage of the proceedings, the effect of observations by third parties is restricted.
- 1.4 Finally, the extent to which the decision under appeal has the effect of *res judicata* is somewhat doubtful. The Board notes that the Examining Division has refrained from stating in the order part of the decision under appeal that the application meets the requirements of the Convention, which is an essential part of the examination prescribed in the Convention (see Articles 96(2) and 97(1) EPC). This leaves the question of whether the Examining Division wanted to make a difference between the substantive requirements of patentability and the formal requirements for the application.
2. The appeal is admissible, since the Appellant is adversely affected by the rejection of the requests preceding the third auxiliary request.
3. Amended claims 1 and 2 filed at the oral proceedings meet the requirements of Articles 76 and 123(2) EPC. In particular, it is directly and unambiguously derivable from the original parent application (see page 8, line 17, to page 9, line 32) and from the divisional

application as filed (see page 9, line 17, to page 10 line 32) that the claimed fibre in blanket form exhibits a shrinkage resistance of less than 11.5% when subjected to 1482°C for four hours.

4. The sole issue to be decided is whether the subject-matter of amended claim 1 meets the requirement of novelty with respect to the teaching of D3. D3 discloses a refractory fibrous material suitable for use as insulating material at high temperatures and compositions for making this fibrous material. Superior fibrous material can be made from compositions containing 40 to 60 wt% silica, 20 to 45 wt% alumina and 3.5 to 20 wt% zirconia, the silica to alumina ratio by weight being at least 1. These compositions are represented on the SiO₂, Al₂O₃, ZrO₂ triaxial diagram of D3 by polygon ACDFG. The refractory fibres can be obtained by melting and fiberising mixtures of alumina, silica and zirconia by the spinning method, in particular by impinging a stream of the molten material on the periphery of two rapidly rotating spinners. Preferably, the compositions used to make the fibrous material contain 40-55 wt% silica, 25 to 45 wt% alumina and 3.5 to 20 wt% silica, the silica to alumina ratio by weight being at least 1. Better yields of small diameter and low bulk density fibrous material are obtained with these preferred compositions, which fall within the polygon ABEFG of the triaxial diagram. The most preferred compositions contain 50-55 wt% silica, 35-45 wt% alumina and 3.5 to 15 wt% zirconia, the silica to alumina plus zirconia weight ratio being at least 1. They have silica, alumina and zirconia contents falling within the polygon EFHJK of the triaxial diagram and give optimal yields in volume per unit time of fibrous material. The compositions of all the apexes of the polygons defined in D3 are reported

lie within both the broadest area ACDFG and the preferred area ABEFG defined in D3, and they overlap the most preferred area EFHJK. The composition of point J, which is one apex of the said most preferred area, falls within the ranges stated in amended claim 1 for all three components. Furthermore, as the silica to zirconia weight ratio of composition J is 3.3, this ratio also lies within the claimed range of 2.6 to 3.8.

4.2 The Appellant's arguments in support of its view that D3 does not actually disclose a fibre composition at point J (see item IV above) are not convincing for the following reasons:

The teaching of D3 is not limited to the disclosure of the coordinates of point J in Table 1. Claim 3 of D3 is directed to a fibrous material consisting essentially of 50-55 wt% silica, 35-45 wt% alumina and 3.5 to 15 wt% zirconia, the silica to alumina plus zirconia weight ratio being at least 1. It is directly and unambiguously derivable from these ranges considered in combination with the composition of point J defined in Table 1 and with the disclosure in column 2 that the said point represents the composition of a fibrous material claimed in claim 3 and resulting from the endpoints of the ranges for the silica, alumina and zirconia contents adding up to 100%. Furthermore, D3 teaches that the compositions of claim 3 and the corresponding area EFHJK in the triaxial diagram constitute the most preferred area giving optimal yields of small diameter and low bulk density fibrous material. It is emphasised that the extremely high yields of spun fibre obtainable by fiberising compositions within this area make them highly suited even to the commercial production of spun fibre that is highly satisfactory for fabricating into blankets (see column 5, lines 65 to 70). The composition 50 w% SiO₂, 35 wt% Al₂O₃, 15 wt% ZrO₂ is therefore not only a fibre

composition directly and unambiguously derivable from claim 3 read in combination with the description and point J of Table 1, it is also the composition of one of the apexes of the **most preferred area EFHJK** and, as shown by the triaxial diagram to scale, this composition J is located **well inside the preferred region ABEFG** which is characterised by giving better yields than the broadest area ACDFG.

D3, contrary to the situation in decision T 26/85 (OJ EPO 1990, 22), contains no information or examples which would teach away from using the composition of point J. D3 discloses seven examples illustrating the invention claimed therein (see examples 1 and 2, runs 2, 3, 5 to 7, and 12; run 5 being identical to example 2; column 5, lines 43 to 48). Of these examples three lie inside the most preferred region EFHJK, one is situated on the boundary line KE of the said region, and the remainder correspond to the compositions of apexes G, A, and B located on the boundary lines of the preferred area ABEFG and further including two parts of borax glass. Although runs 2, 3, 5, and 6 contain 2 parts by weight borax glass, D3 teaches that the inclusion thereof in the compositions does not appear to have any detrimental effect on the quantity of fibre produced and the physical nature thereof (see column 2, lines 33 to 36). Furthermore, a comparison of example 1 with example 2 shows that carrying out run 5 without borax glass leads to an even higher yield of small diameter and low bulk density fibrous material. Both kinds of compositions, ie those containing no modifying agent such as borax glass and those additionally containing up to 6 wt % of said modifying agent, are clearly disclosed as two possible alternatives of the invention according to D3 (see column 2, lines 30 to 36; claims 3 and 9). With the composition of run 11 of Table 2, it was indeed not possible to fuse the bath satisfactorily to produce fibres, however run 11 does

not illustrate the invention according to D3 as expressly stated therein, but a comparative example having too a high silica content (see column 5, lines 57 to 62). Run 12 having the composition of point B is said to produce somewhat coarse fibres, however in view of its relative position with respect to point J in the triaxial diagram, this disclosure would not deter the skilled person from producing fibres with the composition of point J. For these reasons, the skilled person would neither be dissuaded from making a fibre without a borax addition, nor from carrying out the teaching of D3 with the composition of point J.

In connection with the Appellant's arguments that the skilled person would attempt to work within the most preferred range where the highest chance of producing workable fibre is given and not at point J, it should be noted that there is no indication in D3 from which it could be derived that "workable fibres" are achieved only inside the most preferred area EFHJK. Furthermore, when determining the matter made available to the public in D3, not only the most preferred area giving the best (or "extremely high") yields of spun fibres should be taken into consideration but also the preferred area which leads to somewhat lower but still high or acceptable yields of fibres with small diameter and low bulk density.

The Board cannot accept the Appellant's arguments that the skilled person would not have contemplated producing a fibre in strict accordance with composition J because it was highly likely that the resulting fibre would have a composition outside the preferred range. It is immediately apparent from the triaxial diagram of D3 that if the skilled person did not meet the desired exact amounts of silica, alumina and zirconia of point J, then he would obtain a composition falling either within the most preferred region EFHJK or within the

preferred region ABEFG (including boundary lines JK or JH in between). Furthermore, the arguments that the boundaries of the preferred area could have been drawn in very different ways must also fail since the Board has to examine the novelty issue on the basis of what is actually described in D3 and not on how the boundaries could have been defined.

For all the preceding reasons, the Board considers that the skilled person would, in view of the whole content of D3, seriously contemplate carrying out the teaching of D3 with the composition of point J (see decisions T 26/85, OJ EPO 1990, 22, and T 666/89, OJ EPO 1993, 495). Therefore, a refractory fibre having the composition 50 wt% silica, 35 wt% alumina and 15 wt% zirconia is considered to be disclosed in D3.

- 4.3 D3 neither indicates that the fibres are glass fibres nor discloses the shrinkage resistance of the fibres. However, taking into account that the fibres are produced in D3 by the same fiberising method as in the present application and that composition J falls within the ranges defined in amended claim 1, the fibres resulting from this composition are assumed to be glass fibres and to exhibit a shrinkage resistance also lying within the claimed range. The Appellant has confirmed at the oral proceedings that fiberising a molten material having the composition of point J by the well-known fiberising technique used in D3 or by other conventional fiberising techniques would lead to a glass fibre having a shrinkage resistance within the range stated in claim 1. This is also in agreement with the teaching in the present application where it is shown that the critical parameter for obtaining a glass fibre having the desired linear shrinkage resistance is the glass composition. It follows from these considerations and from the fact that D3 discloses a fibre having the composition of point J that the

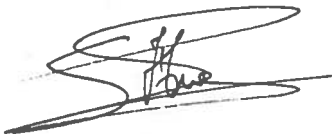
claimed shrinkage resistance of the resulting glass fibres is implicitly disclosed in D3. Therefore, the subject-matter of claim 1 is not new over the disclosure of D3. As claim 1 does not meet the requirement of novelty set out in Articles 52(1) and 54 EPC, the main request filed at the oral proceedings must be rejected.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar:



S. Hue

The Chairman:



R. Spangenberg

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HEB

