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**Datasheet for the decision  
of 15 January 2013**

**Case Number:** T 1014/10 - 3.3.05

**Application Number:** 00986383.8

**Publication Number:** 1242161

**IPC:** B01D 39/20

**Language of the proceedings:** EN

**Title of invention:**

Low boron containing microfibreglass filtration media

**Patentee:**

HOLLINGSWORTH & VOSE COMPANY

**Opponent:**

Hokuetsu Kishu Paper Co., Ltd.

**Headword:**

Low boron filter/H&V

**Relevant legal provisions:**

EPC Art. 56  
EPC R. 103(1)(a)

**Keyword:**

"Inventive step (main request): yes"  
"Reimbursement of appeal fees (no)"

**Decisions cited:**

T 0153/85

**Catchword:**

-



Case Number: T 1014/10 - 3.3.05

**DECISION**  
of the Technical Board of Appeal 3.3.05  
of 15 January 2013

**Appellant:** HOLLINGSWORTH & VOSE COMPANY  
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**Representative:** HOFFMANN EITLE  
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**Respondent:** Hokuestu Kishu Paper Co., Ltd.  
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**Representative:** Meyer-Dulheuer, Karl-Hermann  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
23 February 2010 concerning maintenance of  
European patent No. 1242161 in amended form.

**Composition of the Board:**

**Chairman:** G. Raths  
**Members:** J.-M. Schwaller  
C. Vallet

## Summary of Facts and Submissions

I. The present appeal lies from the decision of the opposition division maintaining European patent No. 1 242 161 on the basis of amended claims filed as third auxiliary request on 21 January 2010 during oral proceedings before the first instance, with claim 1 thereof reading:

*"1. A nonwoven filter media composite comprising glass wool fibres having less than 70% by weight SiO<sub>2</sub> and less than 0.2% by weight boron; and chopped glass fibres containing less than 1.0% by weight boron, wherein said chopped glass fibres are interspersed throughout said glass wool and wherein said chopped glass fibres have an average diameter of 5.0 to 9.0 microns and a length ranging from 0.16 cm (1/16 inch) to 8.08 cm (2 inch) wherein said chopped glass fibres have between 20% and 25% calcium oxide by weight."*

II. With its statement of grounds of appeal dated 2 July 2010, the patent proprietor (hereinafter "the appellant") requested that the decision be set aside and that the patent be upheld on the basis of the claims according to the first or second auxiliary request (now main and first auxiliary request, respectively) that the opposition division had rejected under Article 56 EPC.

**Claim 1 of the (now) main request** (having 19 claims) reads as follows:

*"1. A nonwoven filter media composite comprising glass wool fibres having less than 70% by weight SiO<sub>2</sub> and less*

*than 0.2% by weight boron; and chopped glass fibres containing less than 1.0% by weight boron, wherein said chopped glass fibres are interspersed throughout said glass wool."*

Claims 2 to 19 represent specific embodiments of the subject-matter of claim 1 on which they depend.

The appellant also filed an amended set of claims as second auxiliary request. For the eventuality that the board followed the opposition division's argumentation, it also proposed to add the following disclaimer to all pending requests: "*... whereby chopped glass fibres having sodium oxide concentrations greater than 5% by weight and calcium oxide levels below 20% by weight are excluded.*"

Lastly, the appellant requested reimbursement of the appeal fee.

III. The following document filed during the opposition proceedings is relevant for the present decision:

D2: JP 09-070512 A.

IV. With a letter dated 11 November 2010, the opponent (hereinafter "the respondent") contested the claimed subject-matter under Articles 123(2) and 56 EPC. It argued in particular that the feature that the glass wool fibres have "less than 70% by weight SiO<sub>2</sub>" had no basis in the application as filed. Further, it held claim 1 of the main request to lack inventive step over the disclosure of document D2.

V. Further observations were received from the parties as follows:

From the appellant: letters dated 12 September 2011 and 17 December 2012;

From the respondent: a letter dated 26 November 2012.

VI. At the oral proceedings, which took place on 15 January 2013, the appellant filed three sets of amended claims as auxiliary requests 3 to 5 respectively. The discussion focused on inventive step based on document D2.

VII. The parties' requests are as follows:

The appellant requests that the decision under appeal be set aside and that the patent be maintained on the basis of the claims according to the main request filed on 2 July 2010 or, alternatively, of the claims according to one of auxiliary requests 1 or 2 also filed on 2 July 2010, or alternatively of the claims according to one of the auxiliary requests 3 to 5 filed during the oral proceedings.

The respondent requests that the appeal be dismissed.

## Reasons for the Decision

### *Main request*

#### 1. Allowability of the amendments

The respondent no longer contested the amendments to claim 1 of this request under Article 123(2) EPC, and the board is satisfied that the claims of this request have a basis as follows in the application as filed:

Claim 1 corresponds to the direct combination of original claims 1, 2, 3 and 37. In particular the amendment that the glass wool fibres have "less than 70% by weight SiO<sub>2</sub>" is based on original claim 37, which itself was directly dependent on claim 1 as filed.

Claim 2 has a basis in original claim 2; claim 3 in original claims 4 and 5; claim 4 in original claims 6 and 7; claims 5, 6 and 7 in original claims 8, 9 and 10 respectively; claim 8 in original claims 11 to 13; claim 9 in original claim 14; claim 10 in original claims 15 to 17; claim 11 in original claim 18; claim 12 in original claims 19 and 20; claim 13 in original claims 21 and 22; claim 14 in original claims 23 and 24; claim 15 in original claims 25 to 36; claim 16 in original claims 38 to 42 and 44 to 56; claim 17 in original claims 57 and 58 and claim 18 in original claims 58 and 59 of the application as filed.

2. Novelty

The board is satisfied that claim 1 of this request is novel over the disclosure of document D2, in particular comparative example 3.

- 2.1 D2 (claim 1) discloses an air filter medium comprising 80 to 20% by weight of a glass fibre containing 0.01% by weight or less of  $B_2O_3$ , and 20 to 80% by weight of an organic fibre having a fibre diameter of 1 to 70  $\mu m$  and a fibre length of 1 to 15 mm.

Thus, the major difference between D2 and the subject-matter of claim 1 at issue is that the chopped fibres are made of **glass** in claim 1, while they are of organic nature in D2. A further difference is that D2 preferably makes use of high-silicate or fused quartz glass for the glass wool component, while claim 1 requires that it is made from **less than 70% by weight  $SiO_2$** . D2 specifies in this respect that the "high-silicate" glass fibres and the "fused quartz" glass fibres contain "99.8 of  $SiO_2$ " and "more than 99.9%  $SiO_2$ ", respectively.

- 2.2 In comparative example 3 of D2, the chopped fibres are made of AR glass, which is free of boron and contains an increased content of  $ZrO_2$  (D2, page 3, lines 4 to 7). So even if this is only a comparative example, D2 makes use of glass fibres for both types of fibres, the glass of the main fibre being a high-silicate glass. It follows that claim 1 at issue differs from this example in that the glass fibre of the main component has **less than 70%** by weight  $SiO_2$ .

2.3 Claim 1 therefore is novel and meets the requirements of Article 54(1) and (2) EPC.

3. Inventive step

By applying the problem-solution approach, the board came to the conclusion that claim 1 further meets the requirements of Article 56 EPC for the following reasons.

3.1 The invention relates to non-woven glass fibre composites having glass compositions that are essentially free of boron and which are useful as filter media, especially in the electronics and semiconductor industry (see paragraph [0001] of the contested patent).

3.2 As to the starting point for assessing inventive step, the parties agreed that comparative example 3 of document D2 represented the closest state of the art (see point 2.2).

3.3 As to the technical problem to be solved, the contested patent explains that there was a need in certain technologies to avoid boron contamination in clean room environments, in particular in the microelectronics industry. The traditional filter media used to reduce the contaminants in the air supply, however, either contained substantial amounts of boron or did not retain their mechanical properties (tensile strength, crease strength) under humid conditions or were unsuitable for use at high temperature because they used synthetic reinforcing fibres. Therefore, there was a need for an essentially boron-free filtration media



which circumvented the above problems and retained its mechanical properties, in particular its tensile strength and its crease strength (paragraphs [0002] to [0006]).

- 3.4 As a solution to this problem, the invention proposes the essentially boron-free non-woven filter media composite according to claim 1 at issue, which is in particular characterised in that the glass wool fibres have less than 70% by weight  $\text{SiO}_2$  and in that the interspersed chopped fibres are glass fibres.
- 3.5 As to the question whether the problem as established in the patent in suit has been solved by the proposed solution, the board observes that the patent specification itself suggests that it has not, because in paragraph [0067] it is disclosed that a filter sample comprising low-boron chopped glass fibres having sodium oxide concentrations of greater than 5.0% and calcium oxide levels below 20% did not retain adequate crease strength. Under such circumstances, it is difficult to recognise that the problem identified under point 3.3 is plausibly solved; a reformulation in less ambitious terms is therefore necessary.
- 3.5.1 Asked about this at the oral proceedings, the respondent answered that the problem simply lay in the provision of a non-woven filter media alternative to the one disclosed in comparative example 3 of D2, because as stated in paragraph [0067] certain fibre glass compositions covered by the claimed subject-matter did not retain adequate crease tensile strength.

3.5.2 The appellant disputed this, referring to Figures 4 and 7 of the contested patent and arguing that the problem to be solved consisted in the provision of an improvement of certain mechanical properties of the filter media known from D2. This was confirmed by the results in Figures 4 and 7 which depicted a humid aging study of the tensile strength (Figure 4) and % MD (i.e. machine direction) elongation (Figure 7) in low-boron-containing glass wool composites reinforced with chopped fibres having high amounts of sodium oxide and low amounts of calcium oxide in comparison to a control sample of traditional filter media with borosilicate glass wool and E-glass with 4 to 7% boron content as a reinforcing material.

3.5.3 In the board's opinion, the results summarised in the above figures indicate that low-boron-containing glass wool filter composites show improved tensile strength and elongation properties over the control prior art samples after humid aging, even when reinforced with chopped fibres having high amounts of sodium oxide and low amounts of calcium oxide. This improvement of certain mechanical properties confirms that the problem as stated by the appellant has been plausibly solved.

3.5.4 It follows that the problem underlying the contested patent in the light of document D2 is to be seen in the provision of an essentially boron-free non-woven filtration composite suitable for use at high temperature and showing improved tensile strength and elongation properties under humid aging conditions.

3.5.5 The respondent argued that it made no sense to develop a filter media which was improved only in the above two

aspects, and which thus did not provide the required crease tensile strength. Furthermore, it was not proven that the improvement of the above two properties was due to the presence of interspersed chopped glass fibres. D2 (page 5, lines 3 to 8) disclosed in this respect that a binder was necessary for providing the necessary sheet and pleating strength.

3.5.6 The board cannot accept these arguments because, firstly, there is no evidence on file supporting the respondent's assertions that, on the one hand, such an improved media was not suitable as a filtering media, and, on the other hand, that a binder was also necessary in the claimed subject-matter, and in particular when the glass wool contains less than 70% by weight SiO<sub>2</sub>. Secondly, it is consistent case law of the boards of appeal that an improvement in one property is enough for acknowledging an advantage over the prior art.

3.6 On the question whether the solution as proposed in claim 1 at issue was obvious in view of the cited prior art, in particular D2, the board observes that the air filter disclosed in this document is obtained by blending 20 to 80% by weight of organic fibres having a diameter of 1 to 70 µm and a length of 1 to 15 mm with the essentially boron-free glass fibres so as to absorb the strain generated during the pleating treatment, the organic fibres being soft and easy to bend, so that they do not crack easily even when the fibres are bent (see D2; claim 1 and paragraph [0008]).

3.6.1 As explained in point 2.1 above, the major difference with the invention disclosed in D2 is that the chopped

fibres are made of **glass** in claim 1 at issue, while they are of organic nature in D2. It follows that D2 teaches away from the non-woven filter media composite according to claim 1 at issue, since the solution for improving the mechanical properties of a boron-free glass fibre wool is different from the one proposed in claim 1 at issue.

3.6.2 It is true that comparative example 3 of D2 discloses the use of boron-free chopped glass fibres in combination with the boron-free glass fibre wool. However, this example is clearly identified as comparative and thus logically teaches away from the use of organic fibres taught in D2. In the board's view, this comparative example also teaches away from the solution proposed in claim 1 at issue, since the mechanical properties are worsened, the folding strength being considerably reduced and cracks occurring in folding portions.

3.6.3 In the board's opinion, even if the skilled person tried to follow the teaching of comparative example 3, he would not arrive at the claimed subject-matter because D2 directly and unambiguously teaches to use a glass wool made of high-silicate glass fibres (see the examples; claim 2; paragraphs [0006] and [0007]), and not a glass wool having less than 70% by weight  $\text{SiO}_2$  as defined in claim 1 at issue.

3.6.4 The respondent argued that glass fibres containing less than 70% by weight  $\text{SiO}_2$  were conventionally used and it referred in this respect to the list of eleven documents cited in paragraph [0016] of the contested patent. The board agrees that the kind of glass wool

fibres defined in claim 1 are commonly known, however according to a check by the board none of said eleven documents discloses the use of such glass wool fibres for improving the mechanical properties of a composite filtering media, let alone in combination with chopped glass fibres.

3.6.5 For the above reasons, the board concludes that the subject-matter of claim 1 at issue is not obvious for the skilled person in the light of the disclosure of document D2, taken alone or in combination with one of the eleven documents cited in the contested patent.

3.6.6 The remaining documents cited during the opposition and appeal proceedings also do not contain any information pointing towards the claimed solution of the technical problem stated under point 3.5.4 above.

3.7 For the reasons indicated above, the board concludes that the subject-matter of claim 1 at issue, and by the same token that of dependent claims 2 to 19, which includes all the features of claim 1, is not obvious to the skilled person from the cited prior art.

Therefore, the subject-matter of the claims of this request involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

4. In summary, it follows from the above that the patent no longer contravenes certain requirements of the EPC.

5. Reimbursement of appeal fees (Rule 103 EPC)

The appellant requested the refund of the appeal fee, arguing that during the opposition proceedings the following severe procedural violations had occurred:

- 5.1 First of all, it had been given no opportunity to study the opponent's submissions of 29 December 2009 and 7 January 2010 because they were delivered to its office only on the day of the oral proceedings.

The board observes that on 13 January 2010 the EPO sent an electronic communication to the representative of the then patent proprietor to draw its attention to said new submissions. Independently of when the notification was issued, it is the duty of the parties - and of the board - to check the content of the electronic file in order to make sure that no submission has been added in the days before the oral proceedings. Moreover, the patentee, who got a copy of the submissions at the oral proceedings, could have requested an interruption of the oral proceedings to study their content or even asked the opposition division not to admit them into the proceedings. As shown by the minutes of the oral proceedings, the patentee did not make use of these procedural options. Under these circumstances, the late-filed submissions, which furthermore did not contain any new facts, are simply to be put on the same footing as new arguments which might anyway have been put forward and discussed during the oral proceedings.

The board, therefore, does not see any violation of the patentee's rights under Article 113 EPC.

5.2 Secondly, the appellant complained that at the oral proceedings the opposition division raised a new issue based on the statement in paragraph [0067] of the contested patent. It considered this unfair because the objection could have been raised earlier and, in particular, because the opposition division restricted the extent of amendments to the granted claims.

In the board's view, the division's action does not amount to a substantial procedural violation, because it did actually not raise a new objection in the sense that it changed the general frame of the debate, it only raised a new argument. This new argument was furthermore based on the patentee's own patent, and so the patentee was not confronted with unknown subject-matter.

Furthermore, the issue raised by the opposition division concerned the assessment of inventive step, which was carried out in accordance with the usual practice before the EPO, known as the problem-solution approach. During the whole debate, the opposition division used document D2 as the starting point for assessing inventive step. If now - as in the present case - the patent itself suggests that the technical problem could not be solved under particular circumstances (see point 3.5 above), the patentee who is supposed to know the content of its patent and its weaknesses should be in a position to deal with all the aspects of this issue.

As to the restriction of the extent of amendments to the granted claims, it is consistent case law, as

established e.g. in decision T 153/85, reasons, point 2.1(d), that the opposition division may exercise a discretionary power in relation to requests for amendments in opposition proceedings. The power of the board is restricted to the examination of the opposition division's discretion for a possible abuse or in view of the standard use of this discretion. The second instance may not re-evaluate the situation of its own motion. In the present case, the board observes that despite giving a warning regarding the admissibility of amended claims, the opposition division accepted a new request. Therefore, the appellant was not prevented from defending its case.

- 5.3 As a third ground for reimbursement of the appeal fee, the appellant asserted that it was denied the opportunity to discuss the lawfulness of the change of the name of the then opponent from Hokuetsu Paper Mills, Ltd. to Hokuetsu Kishu Paper Co, Ltd. It argued that there was no evidence on file that interests in the opposition proceedings had legitimately passed from the first firm to the second one, and that Hokuetsu Kishu Paper Co., Ltd. was thus party to the proceedings.

The board notes firstly, as to the formal issues, that the opposition division did not make any decision regarding the issue of the change of name of the opponent. It follows that no relationship between the alleged procedural violation and the contested decision exists, as required by the established case law of the boards of appeal. Secondly, as to the substance, the change of name of a company does not involve a transfer of opponent status that can give rise to a debate about the volume of transferred assets involved in the



opposition. Lastly, the appellant has not submitted any evidence showing that the change of name of the opponent did not really occur. Consequently, there is in fact no issue here to be discussed. Moreover, the fact that the formalities officer had checked the change of name after the first-instance oral proceedings took place cannot be regarded as a lack of fairness vis-à-vis the patent proprietor/appellant. This precautionary measure is part of the usual duties of a formalities officer, and is even more necessary when a party to opposition proceedings seems to cast doubts on the lawfulness of the change of name.

- 5.4 From the above, it follows that in the absence of a substantial procedural violation, the request for reimbursement of the appeal fee is to be refused (Rule 103(1)(a) EPC).

**Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of claims 1 to 19 of the main request filed with letter of 2 July 2010, a description to be adapted, and Figures 1 to 9 of the contested patent.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

C. Vodz

G. Rath