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**D E C I S I O N**  
**of 4 June 1996**

**Case Number:** T 0267/92 - 3.3.3  
**Application Number:** 85300179.0  
**Publication Number:** 0150932  
**IPC:** C08J 5/04  
**Language of the proceedings:** EN

**Title of invention:**  
Reinforced fibre products and process of making

**Patentee:**  
IMPERIAL CHEMICAL INDUSTRIES PLC

**Opponent:**  
BASF Aktiengesellschaft, Ludwigshafen  
Akzo N.V.

**Headword:**  
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**Relevant legal provisions:**  
EPC Art. 54(2), 114(2)  
EPC R. 64(b)

**Keyword:**  
"Admissibility (yes)"  
"Late-filed evidence (excluded)"  
"Novelty (yes); no disclosure of extrinsic feature"

**Decisions cited:**  
G 0002/88, G 0009/91, G 0010/91, G 0001/92, T 0007/81,  
T 0925/91, T 1002/92, T 0039/93

**Catchword:**  
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Case Number: T 0267/92 - 3.3.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.3  
of 4 June 1996

**Appellant:**  
(Opponent 0I)

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**Decision under appeal:**

Interlocutory decision of the Opposition Division  
of the European Patent Office dated 11 December  
1991 and issued in writing on 18 March 1992  
concerning maintenance of European patent  
No. 0 150 932 in amended form.

**Composition of the Board:**

**Chairman:** C. Gérardin  
**Members:** R. Young  
M. Schar

### Summary of Facts and Submissions

- I. The mention of the grant of European patent No. 0 150 932, in respect of European patent application No. 85 300 179.0, filed on 10 January 1985 and claiming a GB priority of 27 January 1984 (GB 84 02193) was announced on 15 March 1989 (cf. Bulletin 89/11).
- II. Notices of Opposition were filed on 2 December 1989 (Opponent OI) on the ground of Article 100(a) EPC, and on 14 December 1989 (Opponent OII) on the grounds of Article 100(a) and 100(b) EPC, the opposition of Opponent OI being supported inter alia by the document:
- D4: EP-A-42 006.
- III. By a decision which was given at the end of oral proceedings held on 11 December 1991 and issued in writing on 18 March 1992, the Opposition Division found that the patent could be maintained in amended form on the basis of a set of Claims 1 to 3 of main request A and Claims 1 to 6, renumbered 4 to 9, of main request B respectively, filed at the oral proceedings, and refiled as a single set of Claims 1 to 9, in accordance with an invitation of the Opposition Division, on 2 January 1992, Claim 1 of which reads as follows:

"A fibre-reinforced thermoformable composite containing at least 30% by volume of reinforcing fibres embedded in a matrix of plastics material comprising reinforcement in the form of a fabric woven from reinforcing fibres characterised in that the short beam shear strength of the composite as determined by ASTM Standard D-2344 using a sample span:thickness ratio of 5:1 is at least 0.7 times the tensile strength or yield strength of the plastics material forming the matrix of the composite

and in that the flexural modulus and flexural strength values of the composite are at least 0.8 times the theoretical flexural modulus and flexural strength values."

Dependent Claims 2 and 3 are directed to elaborations of the composite according to Claim 1.

Independent Claims 4 and 5 are each directed to a process for producing a fibre-reinforced thermoformable plastics composite and dependent Claims 6 to 9 are directed to elaborations of one or other of these processes.

According to the decision, the ground of opposition under Article 100(b) EPC had not been maintained by the Opponent and there was no evidence that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Furthermore, the subject-matter claimed was novel, because none of the citations disclosed a composite or a process according to the main requests. Finally, the subject-matter of the main requests also involved an inventive step.

IV. On 28 March 1992, a Notice of Appeal against the above decision was filed by the Opponent (OI), together with payment of the prescribed fee.

In the Statement of Grounds of Appeal filed on 23 July 1992, the Appellant (Opponent OI) argued in essence as follows:

Document D4, like Claim 1 of the patent in suit, related to reinforced composites with a synthetic matrix and a reinforcing fabric. Example 1A of D4 had now been repeated and the short-beam-shear strength (SBSS) of the

resulting composite measured. It turned out to be 0.81 times the tensile strength of the matrix material. Since, furthermore, it had already been shown, during the opposition proceedings, that the flexural modulus and the flexural strength of the composite of Example 1A of D4 were 0.99 and 0.81 times respectively the theoretical values, which had not been contested, the subject-matter of Claim 1 implicitly lacked novelty.

An experimental report was annexed to the Statement of Grounds of Appeal.

No submission was made with regard to inventive step.

V. The Respondent (Patentee) on the other hand argued, in a submission filed on 24 November 1992, essentially as follows:

(i) The appeal did not comply with Rule 64(b) EPC, since, whilst requesting reversal of the decision under appeal and revocation of the patent in suit, only Claim 1 had been attacked. The appeal should therefore be found inadmissible.

(ii) In Example 1A of D4, no SBSS measurements were quoted. Consequently, the subject-matter of Claim 1 was novel over that disclosure.

(iii) The SBSS measurement provided subsequently by the Appellant was in any case not combinable with the data quoted in the Example of D4, since it could **never** be determined what SSBS value would have been shown by the material in Example 1A of D4.

(iv) In other EPO opposition/appeal proceedings such repeats had been shown to be modified examples of the prior art. In the present proceedings,

therefore, detailed information concerning ply lay-up, moulding times, temperatures and pressures, fibre volume fraction etc., should be provided to show that the example had actually been repeated as described in D4. Additionally, it should be demonstrated by the Appellant that the SBSS test pieces exhibited genuine shear failure, i.e. a delamination crack, and not some other mode of failure which could give rise to unduly high figures.

(v) As the evidence of the Appellant, which had in any case been objected to during the opposition procedure as not being supported (letter dated 1 November 1991), was not appropriate to attack the novelty of the claimed subject-matter, and no reason had been given for its not having been supplied during opposition proceedings, it should be excluded from the proceedings for lack of relevance and/or lateness (Article 114(2) EPC) and costs awarded to the Respondent.

(vi) If the evidence were found admissible and the novelty attack to have merit, the Respondent requested an opportunity to submit further statements/evidence/amended claims/specification, oral proceedings and an award of costs.

VI. With a submission filed on 18 January 1993 (letter dated 14 January 1993) the Appellant indicated that relief was sought only in respect of the subject-matter of Claims 1 to 3 of the patent in suit, and that no separate arguments were required in respect of Claims 2 and 3, since they were dependent upon Claim 1. No relief was sought in respect of the subject-matter of Claims 4 to 9.

Further experimental details of the procedure followed in the repetition of Example 1A of D4 were supplied, including a further experimental report showing a test of "Interlaminar shear strength".

- VII. In response to a summons to oral proceedings issued on 26 October 1994, all three parties indicated in writing that they would not attend.

The oral proceedings, appointed for 14 March 1995, were then cancelled by the Board, with a communication issued on 18 January 1995.

- VIII. The Appellant requests the issue of a decision on the state of the file (letter dated 15 December 1994, received on 17 December 1994).

The Respondent requests a decision based on the written submissions (fax received on 18 October 1994). This is regarded as including a request for an award of costs (submission of 24 November 1992).

No request was received from the Opponent (OII), who had taken no active part in the appeal proceedings.

### **Reasons for the Decision**

1. Admissibility of the appeal.

Rule 64(b) EPC governs the content of the Notice of Appeal. Its requirements are that the Notice of Appeal shall contain a statement identifying the decision which is impugned and the extent to which amendment or cancellation of the decision is requested.

1.1 In the present case, the Notice of Appeal, which is drafted in German, requests "die Zurückweisung des Einspruchs - Art. (102)(2) EPÜ - aufzuheben und das Patent zu widerrufen", i.e. the rejection of the opposition (Article 102(2) EPC) to be set aside and the patent revoked. Whilst it is true that the decision under appeal was in fact the maintenance of the patent in amended form (Article 102(3) EPC) and the Notice of Appeal should therefore more correctly have identified the decision as "die Aufrechterhaltung des Patents in geändertem Umfang - Art. 102(3) EPC -....", nevertheless all the other relevant information, including the date of the decision and the number of the case under appeal, are correct and there is no difficulty therefore in identifying the decision which is impugned (cf. T 925/91, OJ EPO 1995 469, Reasons for the decision, point 1.1).

As to the extent to which the decision is impugned, the request for the revocation of the patent clearly indicates that what is sought is the cancellation of the decision in its entirety.

1.2 In cases where the extent to which cancellation of the decision is not expressly requested, the Board may check whether this extent can be determined from the totality of what is put forward (T 7/81, OJ EPO 1983, 98).

1.3 Closer examination of the Statement of Grounds of Appeal shows, however, that a reasoned attack is made only on product Claim 1. This is confirmed in a later submission of the Appellant, which states that independent process Claim 4 and Claims 5 to 9 are no longer attacked (submission filed on 18 January 1993). Such a statement made subsequently cannot, however, affect the admissibility of the appeal as a whole, since, contrary to the position taken by the Respondent



(cf. Section V.(i), above), the relevant requirement of Rule 64(b) had already been fulfilled in the Notice of Appeal itself.

1.4 In any case, the Board sees no inconsistency between the Statement of Grounds of Appeal and the Notice of Appeal, since the result of successfully attacking the subject-matter of Claim 1 only of the patent in suit would, in the absence of auxiliary requests (which was the position), be the revocation of the patent in suit in its entirety.

1.5 In summary, the relevant requirement of Rule 64(b) EPC is fulfilled and the appeal is admissible.

2. *Admissibility of late-filed evidence of the Appellant*

2.1 The late-filed evidence of the Appellant comprises an experimental report of an alleged repetition of Example 1A of document D4, as well as the results of SBSS measurements performed on the resulting moulded composite, and tensile strength measurements performed on the matrix material used in the composite.

2.2 Even if the report represents a faithful reproduction of the relevant example of D4 (which has been contested by the Respondent) and the resulting values of the SBSS and tensile strength measurements are indeed accurate, this information is, for the reasons given in Section 4.7, below, irrelevant to the outcome of the appeal.

2.3 The late-filed evidence cannot, therefore, be said to fulfil the criterion of being highly likely to prejudice the maintenance of the European patent (T 1002/92, OJ EPO 1995, 605, following the principles laid down in G 9/91 and G 10/91, OJ EPO 1993, 408 and 420, respectively).

2.4 It is therefore excluded in accordance with Article 114(2) EPC for lack of relevance.

3. *Allowability of amendments*

3.1 The text of the patent in suit forming the basis of the appeal is unchanged compared with that on which the decision under appeal is based.

3.2 No objection was raised to the amended claims and description under Article 123 EPC, and the Board concurs with the reasons given in the decision under appeal in this connection (point II.2).

3.3 Consequently, the claims and description of the patent in suit meet the requirements of Article 123 EPC.

4. *The state of the art*

The patent in suit, in its product aspect, is concerned with a fibre-reinforced thermoformable composite containing at least 30% by volume of reinforcing fibres embedded in a matrix of plastics material comprising reinforcement in the form of a fabric woven from reinforcing fibres and characterised in that the flexural modulus and flexural strength values of the composite are at least 0.8 times the theoretical flexural modulus and flexural strength values (Claim 1).

In this connection, the theoretical reinforcement values are defined as follows:

Theoretical Flexural Modulus =  $N \times V_f \times$  modulus of fibre;

Theoretical Flexural Strength =  $N \times V_f \times$  strength of fibre;

where  $V_f$  is the volume fraction of fibre and the factor  $N$  represents the fraction of the reinforcement arrayed in the test direction, so that, for products based on woven composites, which are biaxial,  $N = 0.5$  (description of patent in suit, page 3, lines 17 to 22).

Such a composite is, however, known from D4, the only document relied on by the Appellant in the appeal, and which is considered to be the closest state of the art.

4.1 According to D4, a method for preparing a carbon fibre reinforced thermoplastic resin moulded article is characterised in that a composite sheet formed by incorporating a fabric consisting substantially of carbon fibre filaments with a thermoplastic resin is shaped into a desired form at a temperature not lower than the melting point or softening point of the thermoplastic resin and below the decomposition temperature thereof and then cooled (Claim 1).

4.1.1 According to Example 1A, six plies of a carbon fibre woven fabric ("Torayca" Cloth # 6341, crimp ratio 0.2%, a product of Toray Industries Inc.) were laid up, after burning off the binder of the cloth with a gas burner, alternately with seven plies of nylon 6 sheets each 0.3 mm thick. The laminate was heated at 270°C under a pressure of 35 kg/cm<sup>2</sup> for 3 minutes in a plane mould mounted in a hot press, then cooled to room temperature whilst maintaining the pressure at 35 kg/cm<sup>2</sup> to obtain a composite 2.5 mm thick (page 11, lines 1 to 12).

4.1.2 Then, a square 200 x 200 mm sheet was cut out from the composite sheet, preheated for 3 minutes in an oven set at 270°C and then fed to a cup forming mould set at 120°C. The dimensions of the cup forming mould were: a bottom portion diameter of 100 mm, an upper opening portion diameter of 120 mm and a depth of 20 mm. The

mould was closed at a speed of 2.5 mm/s and the square sheet was cooled for 20 s at a pressure under about 100 kg/cm<sup>2</sup>. The mould was then opened and the moulded article (A) taken out (page 11, lines 13 to 25).

4.1.3 Finally, a test piece was cut out from the bottom portion of the moulded article (A) and subjected to a bending test according to ASTM D-790, the results being given in Table 1 (page 12, lines 21 to 24).

4.1.4 According to Table 1, the carbon fibre fabric of moulded article (A) had:

- a volume fraction of fibrous reinforcing agent of 53%;
- a Flexural Modulus of 6.2 ton/mm<sup>2</sup>; and
- a Flexural Strength of 76 kg/mm<sup>2</sup>

(page 13, lines 1 to 8).

4.2 Furthermore, according to the evidence provided by the Appellant during the opposition proceedings (submission of 10 December 1990, copy of page 2 annexed to Statement of Grounds of Appeal) these values of the flexural modulus and flexural strength correspond to 99% and 81% respectively of the theoretical values.

4.3 The accuracy of this finding has not been challenged by the Respondent.

4.4 A key issue to be determined in this appeal is whether D4 discloses, in particular in relation to the composite in Example 1A thereof, the remaining parameter defined in Claim 1 of the patent in suit, viz. a short beam shear strength (SBSS) determined by ASTM Standard D-2344

using a sample span : thickness ratio of 5:1, of at least 0.7 times the tensile strength or yield strength of the matrix of the composite.

- 4.5 In this connection, neither SBSS nor tensile strength/yield strength of the matrix material are mentioned in D4 at all, let alone in the relevant ratio of the two components. Consequently, there is no explicit disclosure of this parameter in D4.
- 4.6 As to the question of whether the relevant ratio is nevertheless implicitly disclosed by virtue of the availability to the public of the product taught in Example 1A, it is necessary to consider the nature of the parameter represented by this ratio.
- 4.6.1 The Enlarged Board of Appeal has found in its Opinion G 1/92 (OJ EPO 1993, 277) that "a commercially available product *per se* does not implicitly disclose anything beyond its composition or internal structure. Extrinsic characteristics, which are only revealed when the product is exposed to interaction with specifically chosen outside conditions, e.g., reactants or the like, in order to provide a particular effect or result or to discover potential results or capabilities, therefore point beyond the product *per se* as they are dependent on deliberate choices being made. Typical examples are the application as a pharmaceutical product of a known substance or composition (cf. Article 54(5) EPC) and the new use of a known compound for a particular purpose, based on a new technical effect (G 2/88, OJ EPO 1990, 93). Thus, such characteristics cannot be considered as already having been made available to the public" (Reasons for the Opinion, point 3).

- 4.6.2 In the light of the above, the SBSS of the composite and the tensile strength and yield strength of the matrix material must be regarded as extrinsic properties, since they depend on an interaction with an external environment, viz. the stress pattern imposed by the measuring device for obtaining SBSS or tensile strength/yield strength values respectively.
- 4.6.3 The ratio of these two values forming the parameter appearing in Claim 1, whilst itself being a dimensionless quantity, is nevertheless evidently derivable in practice only by measurement of the relevant SBSS and tensile strength/yield strength values. These are, however, as established above, extrinsic characteristics.
- 4.6.4 Consequently, the ratio parameter must also be regarded as an extrinsic characteristic of the composite of D4.
- 4.7 In view of this finding, the question, addressed by the experimental evidence of the Appellant (Section 2.2, above), of whether a repetition of Example 1A of D4 would inevitably result in a composite having a ratio of SBSS to tensile strength/yield strength values falling within the range defined in Claim 1 is irrelevant, because D4 does not contain any instruction to make such extrinsic measurements.

In other words, D4 fails to disclose all the features of Claim 1 of the patent in suit.

- 4.8 Hence, the Board sees no reason to diverge from the finding in the decision under appeal that the subject-matter of Claim 1 and therefore of Claims 2 and 3 is novel.

4.9 Since, furthermore, the finding of novelty in the subject-matter of Claims 1 to 3 was the only ground on which the decision under appeal was contested by the Appellant, the appeal must fail on this basis alone. In particular, there is no necessity for the Board to consider inventive step, in view of the judicial rather than investigative function of the Boards of Appeal (T 39/93 of 14 February 1996, to be published in OJ EPO; Reasons for the decision, point 3.1.1).

5. *Costs*

With regard to the the request of the Respondent for an award of costs (Section V.(vi), above), and in the absence of any reasoned submission as to separate, additionally incurred expenditure by this party, the Board sees no reason in equity for ordering a different apportionment of costs (Article 104(1) EPC).

**Order**

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

1. The appeal is dismissed.
2. The request of the Respondent for costs is dismissed.

The Registrar:

The Chairman:

P. Martorana

C. Gérardin