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D E C I S I O N
of 21 December 1999

Case Number: T 0555/97 - 3.3.3

Application Number: 87309156.5

Publication Number: 0264290

IPC: C08L 67/02

Language of the proceedings: EN

Title of invention:

Composition for injection moulding

Patentee:

POLYPLASTICS CO. LTD.

Opponent:

Toray Industries, Inc.
Nippon Petrochemical Co. Ltd.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 54, 56

Keyword:

"Amendments - added subject-matter (no)"
"Novelty - implicit disclosure (no)"
"Inventive step - physical characteristics not considered in
the prior art"

Decisions cited:

-

Catchword:

-



Case Number: T 0555/97 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 21 December 1999

Appellant:
(Opponent 01)

Toray Industries, Inc.
8-1, Mihama 1-chome
Urayasu
Chiba 279 (JP)

Representative:

Kador & Partner
Corneliusstrasse 15
D-80469 München (DE)

Other party:
(Opponent 02)

Nippon Petrochemical Co., Ltd.
3-1, 1-chome
Uchisaiwaicho, Chiyoda-ku
Tokyo (JP)

Representative:

Smaggasgale, Gillian Helen (GB)
OLSWANG
90 Long Acre
London WC2E 9TT (GB)

Appellant:
(Proprietor of the patent)

POLYPLASTICS CO. LTD.
30 Azuchimachi 2-chome
Higashi-ku
Osaka-shi (JP)

Representative:

W.P. THOMPSON & CO.
Eastcheap House
Central Approach
Letchworth
Hertfordshire SG6 3DS (GB)

Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office posted 27 March
1997 concerning maintenance of European patent
No. 0 264 290 in amended form.

Composition of the Board:

Chairman: C. Gérardin

Members: B. ter Laan
J.-C. De Preter

Summary of Facts and Submissions

- I. Mention of the grant of European patent No. 0 264 290 in respect of European patent application No. 87 309 156.5, filed on 16 October 1987, claiming priority from an earlier application in Japan (247097/86 of 17 October 1986), was published on 26 January 1994 on the basis of six claims, Claim 1 reading:

"A resin composition characterised in that it comprises 40 to 80 percent by weight of a thermotropic, liquid crystalline polyester capable of exhibiting anisotropism in the molten state and having a weight-average molecular weight of 2,000 to 200,000 and 20 to 60 percent by weight of a fibrous material having a tensile modulus of not less than 6,000 kg/mm², and after mixing, a weight-average length of 0.15 to 0.60 mm and an aspect ratio of not less than 10."

Claims 2 to 6 referred to preferred embodiments of the composition according to Claim 1.

- II. On 24 October 1994 and on 26 October 1994 two Notices of Opposition against the granted patent were filed, in which the revocation of the patent in its entirety was requested on the grounds set out in Article 100(a) EPC.

The oppositions were, *inter alia*, supported by the following documents:

D1: Journal of Material Science, 21 (8), August

1986, p. 2889-2900,

D4: *Plastics*, vol. 37(3), March 1986, p. 103-110
(partial translation of pages 106 and 107),

D13: GB-A-2 167 513 and

D15: Partial English translation of *Polymer Digest*,
vol. 38, No. 2, February 1986, p. 37-56),

the last two having been submitted outside the
opposition period pursuant to Article 99(1) EPC.

III. By a decision issued in writing on 27 March 1997, the
Opposition Division held that the grounds for
opposition did not prejudice the maintenance of the
patent in an amended form corresponding to the second
auxiliary request, Claim 1 reading:

"A resin composition characterised in that it
comprises 40 to 80 percent by weight of a
thermotropic, liquid crystalline polyester capable of
exhibiting anisotropism in the molten state and
having a weight-average molecular weight of 2,000 to
200,000 and 20 to 60 percent by weight of carbon
fibre having a tensile modulus of not less than
6,000 kg mm⁻², and after mixing, a weight-average
length of 0.40 to 0.60 mm and an aspect ratio of not
less than 10."

The Opposition Division held that

(a) In view of their relevance, the late filed
documents D13 and D15 should be admitted into

the proceedings.

- (b) Regarding the formal requirements, the main request and first auxiliary request did not comply with Articles 83 and 84 EPC, since an essential feature was not disclosed in a manner sufficiently clear and complete to achieve the object of the invention. Moreover, the first auxiliary request did not satisfy the requirements of Article 123(2) EPC. Therefore, those requests were not allowable.

By contrast, the second auxiliary request fulfilled the requirements of Articles 83, 84, 123(2) and 123(3) EPC.

- (c) As regards novelty, none of the cited documents disclosed weight average fibre lengths. D13 referred to number average glass fibre lengths of 0.1 to 1.0 mm. D15 disclosed a carbon fibre filled polyester with the desired low moulding shrinkage values. Therefore, it was doubtful that the claimed weight average fibre length range was disclosed by any of the cited documents. In such a case, the novelty of the claimed subject-matter should be recognized.
- (d) Regarding inventive step, D15 was considered to be the closest document. The problem to be solved was seen as finding an alternative resin composition, which object was achieved. Since it was not obvious from the other cited documents, in particular D13 and D1, that varying the weight average fibre length would lead to a

polyester performing equally well as that described in D15, the subject-matter claimed in the second auxiliary request involved an inventive step.

IV. On 14 May 1997 Opponent I lodged an appeal against the above decision and paid the prescribed fee simultaneously. The Statement of Grounds of Appeal was filed on 24 July 1997. In a submission dated 7 January 1998, reference was made to a further document which had not previously been cited.

On 4 June 1997 the Proprietor also lodged an appeal against the above decision and paid the prescribed fee simultaneously. The Statement of Grounds of Appeal, which contained a set of five claims as the new main request, was filed on 25 July 1997. Claim 1 reads:

"A resin composition characterised in that it comprises 40 to 80 percent by weight of a thermotropic, liquid crystalline polyester capable of exhibiting anisotropism in the molten state and having a weight-average molecular weight of 2,000 to 200,000 and 20 to 60 percent by weight of carbon fibre having a tensile modulus of not less than 6,000 kg mm⁻², and after mixing, a weight-average length of 0.20 to 0.60 mm and an aspect ratio of not less than 10."

Claims 2 to 5 referred to preferred embodiments of the composition according to Claim 1.

Opponent II did not file an appeal but availed itself

of the opportunity to comment by a letter dated 27 July 1998.

- V. Oral proceedings before the Board were held on 21 December 1999. Opponent II, as a party to the proceedings as of right (Article 117 EPC), had been duly summoned to the hearing but informed the EPO by letter of 3 December 1999 that it would not attend the oral proceedings.
- VI. The arguments of the Opponents can be summarized as follows:
- (a) According to Opponent I, the document cited for the first time with its letter of 7 January 1998 was not only relevant for the issue of novelty, but also provided an adequate basis for an objection of insufficient disclosure. The latter objection, raised for the first time during the oral proceedings, was withdrawn after the Proprietor's protests.
 - (b) The claims of the new main request did not comply with Article 123(2) EPC, since the combination of fibre material and fibre length was not disclosed in the original application. During the oral proceedings the objection concerned the incorporation in Claim 1 of only part of the subject-matter of Claim 2 as granted.
 - (c) The resin composition as defined in Claim 1 was not novel in view of the disclosures of D1, D13 and D15.

- (c1) D1 disclosed all features of the subject-matter now claimed, partially explicitly, partially implicitly. The polyester, its molecular weight and its amounts as well as the presence of glass or carbon fibres and their number average length were explicitly mentioned. The tensile modulus of the fibre was implicit in the material used and the aspect ratio was implied by the length and diameter data. The weight average length of the glass fibres could be calculated from the number average length on the basis of the length distribution curves also given in D1. Since the use of both glass fibres and carbon fibres was mentioned, these fibres could be considered equivalent, so that the calculations for the glass fibres were also valid for carbon fibres.
- (c2) The same reasoning was used regarding D13, which specifically mentioned compositions containing fibrous material having a number average length that amounted to a weight average fibre length of at least 0.4 mm, which was within the required range.
- (c3) D15 also disclosed all claimed features, since the fibre length could be deduced from the values given for the mould shrinkage.
- (d) As regards inventive step, the problems addressed in the patent in suit concerned moulding shrinkage and linear expansion of injection moulded products. Starting from D13, this document disclosed the use of glass fibres

of a number average length which, when recalculated, would fall within the range of weight average fibre length now required. Since D13, like D1, also mentioned carbon fibres as being equivalent to glass fibres, the skilled person would have considered using carbon fibres instead of glass fibres, and thus arrive at the presently claimed subject-matter.

Starting from D15, the same line of reasoning was followed. D15 referred to the problem of mould shrinkage and disclosed glass fibres with a length falling within the range now required. In the light of D13 and D1 it would have been obvious to use carbon fibres instead of glass fibres.

Furthermore, in D4, which disclosed the mould shrinkage in relation to glass fibre length, the skilled person would find an incentive to consider fibre length in order to improve moulding shrinkage.

Moreover, the selection of a specific fibre length was not associated with particular beneficial effects. The graphs upon which the Proprietor had based this assertion, were flawed and could not serve as evidence of such an effect. This was confirmed by the numerous changes in the required length range during the whole opposition proceedings, so that the claimed length range apparently was not a critical feature which could provide patentability to the claimed subject-matter.

Therefore, the claimed subject-matter did not involve an inventive step.

VII. The Proprietor, in its written and oral submissions, argued essentially as follows:

- (a) The late filed document should not be introduced into the proceedings, since it was only cited at a very late stage shortly before the oral proceedings. Moreover, the objection of insufficient disclosure was raised much too late as well and should not be accepted.
- (b) There was a proper basis for the amendments in the claims, in particular for the partial incorporation of original Claim 2 into Claim 1.
- (c) Regarding novelty, none of the cited documents disclosed all the features of the claimed compositions. In particular, certain values indicated in D1 did not refer to the same properties (e.g. number vs. weight average molecular weights and fibre lengths) and the tensile modulus of the fibres was not disclosed either explicitly or implicitly. The Opponents' calculations were based upon many invalid assumptions: for example the data for glass fibres were not applicable to carbon fibres.
- (d) As regards inventive step, none of the cited documents suggested to use carbon fibres of a specific weight average fibre length for the solution of the moulding shrinkage problem. No conclusions concerning that problem could be

drawn from the information present in any of the documents. Therefore, the claimed subject-matter was not obvious.

VIII. Opponent I requested that the decision under appeal be set aside and the patent be revoked.

In conclusion to its written statement, Opponent II requested that the patent be revoked in its entirety.

The Proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims filed on 25 July 1997 or, alternatively, that Opponent I's appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

Procedural matters

2. In its statement of 7 January 1998 Opponent I referred to a new document, without however providing a copy of it. During the oral proceedings before the Board, this document was used to support an objection under Article 83 EPC, which objection had not been made earlier at any stage of the proceedings and which was later withdrawn. Opponent I stated that the new document was also relevant for the issue of novelty. A partial English translation of this document, which was in the Japanese language, had only been made available to both the Proprietor and

the Board very shortly before the oral proceedings. Additionally, the Proprietor stated that prima facie it was not detrimental to novelty. After discussion of the relevance of this citation the Board came to the same conclusion. For these reasons, the Board decided not to admit the document to the proceedings (Article 114(2) EPC).

Amendments

3. Claim 1 of the main request differs from Claim 1 as granted in that the fibre material is limited to carbon and in that the minimum weight average fibre length value is raised from 0.15 to 0.20. Support for those amendments can be found in Claim 3 and on page 29, line 10 of the original application (page 17, lines 34 to 35 of the patent specification), respectively, the latter disclosing the preferred weight average fibre length separate from the aspect ratio. The combination of fibre material and fibre length is based on original Claim 3, which refers to Claim 1 and where both carbon and glass are disclosed as fibre materials, and from which it is clear that any of those materials can be combined with the general weight average fibre length range. This is confirmed by original description page 29, first full paragraph, to page 30, second full paragraph. Therefore, the requirements of Article 123(2) EPC are met.

The amendments to the claimed subject-matter amount to limitations, so that the requirements of Article 123(3) EPC are satisfied as well.

Novelty

4. The Opponents based their novelty objection mainly on features which were allegedly implicitly disclosed in D1, D13 and D15.

4.1 D1 is a report on an investigation of the microstructure and some mechanical properties of a liquid crystal polymer and its short-fibre composites. It was found that injection moulded plates of the latter materials exhibited a layered structure well-known for many short-fibre reinforced polymer systems. A pronounced layer structure was also found in the neat liquid crystal polymer matrix, superimposed by a certain degree of molecular orientation. The special microstructural character of the matrix polymer resulted in high anisotropy of the mechanical properties of all materials investigated. In particular, this was found for the tensile strength, the fracture toughness and the fatigue crack propagation. The composites showed nearly no improvement or even a reduction in their performance, compared to the matrix material, as far as these properties were concerned. This could, in part, be correlated to microscopic failure mechanisms detected by scanning electron microscopy of the fractured surfaces, revealing that the fibre-matrix bond strength was relatively poor (Summary).

4.1.1 The materials tested in D1 are described in Table 1 on page 2890, where, amongst others, a thermotropic copolyester having a molecular weight of more than 20,000 (see page 2889, section 2.1) is disclosed, which is mixed with various weight percentages of

glass or carbon fibres and other fillers. In one test, the polyester is filled with 30 weight % of carbon fibre. According to page 2891, second column, last paragraph of section 3.1.2, the average value of the fibre length is 180 μm , or 0.18 mm.

- 4.1.2 The parties agreed that, in order to calculate the weight average fibre length out of the number average fibre length, knowledge of the length distribution of the fibres is indispensable. On page 2895, Figure 10, length distributions of glass fibres are shown for 19 and 35 vol.% glass fibre content, which corresponds to 30 and 50 weight % (see page 2890, Table I). Those curves are clearly different.

Based on that information Opponent I presented the following calculations:

- for 30 weight % glass fibre content:

disclosed number average fibre length: 160 μm ,

calculated weight average fibre length: 219 μm ,

difference: 37%.

- for 50 weight % glass fibre content:

disclosed number average fibre length: 130 μm ,

calculated weight average fibre length: 204 μm ,

difference: 64% (this value is questioned by the Board).

Opponent I then took the differences in percent between the number average fibre length and weight average fibre length values for glass fibres (37 and 64%) and calculated their average as being about 50%. Based upon that average, Opponent I calculated the carbon fibre data. Thus, to the 180 μm number average fibre length disclosed for the carbon fibres used in Table I, about 50% should be added, so as to arrive at a weight average fibre length of 270 μm , which was within the claimed range.

- 4.1.3 The calculations of Opponent I are based upon at least two assumptions: (a) that information from glass fibre length distributions would be applicable to carbon fibres and (b) that the values calculated from the two glass fibre curves given for different contents of fibre could be simply averaged and that that average could be applied to a carbon fibre content of 30%.
- 4.1.4 The Board cannot follow that line of argument.
 - 4.1.4.1 First, Opponent I did not provide any evidence that, in general, distribution curves for glass fibres would be applicable to carbon fibres. Opponent I's references to the interchangeability of carbon and glass fibres are not to the point since either they are part of a list of possible fibre materials which does not imply the same properties and hence interchangeability (e.g. D1, page 2889, section 2.1, second sentence; D13, page 9, line 10), or they refer to the effect on mechanical properties when fibres are used as fillers (patent in suit, page 17,

lines 38 to 40 and 51 to 52). Therefore, no conclusion can be drawn as to the applicability to carbon fibres of fibre length distribution curves for glass fibres.

4.1.4.2 Secondly, Opponent I has not explained why the average of two curves for different glass fibre contents (30 and 50 weight %) would be correct for a content of 30 weight % carbon fibre. Averaging the two curves is not based upon any information in D1 or any other document and cannot be interpreted but as being a random action. If one would apply a glass fibre curve to carbon fibres, it would seem more logical to use the one with the same fibre content. The very fact that Opponent I did not do so is an indication that there is no basis for using a glass fibre curve to calculate the weight average length out of the number average length of carbon fibres.

4.1.4.3 Moreover, in view of the fact that fibres are broken down during mixing into the matrix polymer, which was not disputed by the parties, it is even questionable whether the fibre length distributions would not also vary with mixing circumstances other than just the fibre content.

4.1.5 In view of the above considerations, and in view of the fact that the difference between weight average fibre length and number average fibre length may vary to a considerable degree (from zero in case all fibres have the same length to a high value, as illustrated above), the Board comes to the conclusion that the present range of weight average fibre length is not clearly and unambiguously derivable from D1.

Even if, for the sake of argument, the other assumptions regarding molecular weight, fibre tensile strength and aspect ratio would be correct and the values as now required in the claims would be implicitly disclosed, the lack of disclosure regarding the fibre length is sufficient to establish novelty over D1.

4.2 The same arguments are valid as regards D13.

D13 discloses a one-piece fastening device of thermotropic liquid crystalline polymer containing up to about 50% by weight of a reinforcing agent comprising a head and a relatively rigid axial shank adapted to be inserted in the aperture of a workpiece characterized by a shear strength of at least about 15,000 psi and a tensile strength of at least 20,000 psi (Claim 1). The amount of reinforcing agent may vary from 10 to 40% by weight (Claim 12) and it can comprise glass fibres with a number average length of about 0.1 to 1.0 mm, preferably of 0.3 to 0.4 mm (Claim 13). No fibre length distribution and no further details such as the tensile strength and aspect ratio of the fibres are disclosed. Carbon fibres are only mentioned as one of many possible alternatives (page 9, lines 9 to 12), which does not allow for a conclusion of general interchangeability of the fibre materials. Therefore, the considerations regarding D1, in particular the reservations regarding the use of glass fibre data for calculating carbon fibre lengths, apply even stronger to D13.

4.3 D15 describes wholly aromatic polyester-type liquid crystal resins, one of which (indicated as A230) is

filled with 30% carbon fibre (sections B and C). No further details of the fibres are given, in particular not their tensile strength, length and aspect ratio. Opponent I argued that from Figure 19 it could be seen that the moulding shrinkage of the composite had the same value as that in the patent in suit, which was illustrated in Annex 1 to a letter of the Proprietor dated 15 May 1998. Hence the product must have been the same and the weight average fibre length of the fibres used in D15 must have been within the range now required.

That argument cannot be accepted by the Board. It is not possible to deduce the exact composition of the product of D13 by its properties alone. The same properties are likely to be achieved by means of a wholly different composition, that is, with a different polymer containing a different filler in different amounts. It is even more far-fetched to conclude on that basis that the length of the fibres used in A230 of D13 would be within the range now required in the claims. Therefore, apart from the lack of disclosure of the other polymer and fibre properties, there is also no disclosure of the required carbon weight average fibre length.

- 4.4 For the above reasons the Board comes to the conclusion that the claimed subject-matter is novel.

Problem and solution

5. The patent in suit concerns a composition for injection moulding.

- 5.1 As explained in the introduction of the patent specification (cf. page 2, lines 8 to 23), the engineering plastics are mostly crystalline polymers which give rise to high moulding shrinkage. Although thermotropic liquid crystalline polyesters overcome this shortcoming in that the crystalline structure is preserved at the processing temperatures, the moulding shrinkage - although overall small - varies considerably depending on direction with respect to the resin flow in the moulding process, which makes it difficult to produce precision mouldings.
- 5.2 Although no explicit reference to D15 is made in the patent specification, this introductory statement confirms exactly the observations reported in D15, which is thus to be regarded as the closest state of the art. According to that teaching the addition of mineral fillers, e.g. glass fibers or carbon fibers, to liquid crystalline wholly aromatic polyesters has the desired reinforcing effect (cf. page 2, Table 1), however without reducing the anisotropic character of the sufficient of linear expansion, which is generally lower at flow direction than at transverse direction (cf. page 3, Table 10; page 4, Figure 19).
- 5.3 In the light of that general shortcoming the technical problem underlying the patent in suit may thus be seen in the provision of a liquid crystalline polyester composition suitable for injection moulding that has improved moulding shrinkage properties, that is, low anisotropy in moulding shrinkage and low absolute value of moulding shrinkage in any part and in any direction of injection moulding items (page 2, lines 15 to 24; page 18, lines 5 to 11).

5.4 According to the patent in suit that problem is to be solved by a resin composition that comprises a specific thermotropic, liquid crystalline polyester and a specific carbon fibre having specific tensile modulus, weight average length and aspect ratio, as defined in Claim 1.

5.5 The examples in the patent specification and the additional examples provided with the Proprietor's letter of 17 December 1996 and statement of 15 May 1998 (Annex 1) demonstrate that the anisotropy of the moulding shrinkage properties is less than that of composites described in the prior art.

5.5.1 In this respect, the arguments of Opponent I regarding the validity of the graphs provided by the Proprietor are based upon an interpretation of the information given in the patent in suit which is not supported by any evidence provided by Opponent I himself. There is in fact no reason to assume that the curves furnished by the Proprietor would not be correct or would not reflect the technical reality. In particular, the Opponents, who have the onus of proof, have not shown that the weight average fibre length range would not lead to the reduction of anisotropy of the moulding shrinkage demonstrated in the graphs or that the above-defined problem was not solved by the various features of present Claim 1.

5.5.2 Also the fact that the Proprietor often changed the claimed range of the weight average fibre length during the proceedings is not *per se* indicative of a lack of inventive step. The Proprietor is entitled to amend the claims as he sees fit, as long as the

requirements of the EPC are complied with. The beneficial effect on moulding shrinkage of the present range of 0.20 to 0.60 μm weight average fibre length is, as pointed out above, supported by the original disclosure as well as by the examples and additional examples and no evidence as to the contrary was presented by any of the Opponents.

- 5.5.3 Therefore, the Board concludes that the above-defined technical problem is effectively solved by the composition according to Claim 1.

Obviousness

6. It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.

- 6.1 A closer examination of the experimental results of Table 10 of D15 shows that the incorporation of fillers generally reduces the difference between the coefficient of linear expansion at flow direction and the coefficient of linear expansion at transverse direction. Further, with the exception of the first temperature range (35 to 50°C), the anisotropic character tends to be lower for compositions filled with glass fibers (grade A130) than for compositions filled with carbon fibers (grade A230). Thus, in the absence of any further indication how the accuracy of the transfer of the mould dimensions and configuration could be improved, the skilled person faced with the above-defined technical problem would be rather inclined to consider a solution along the line of glass fiber filled compositions.

Even if, for the sake of argument, carbon fiber filled compositions were to be regarded as a promising composite, there would be no teaching about the parameters and features likely to reduce the mould shrinkage of these compositions, thus no incentive to consider a specific combination of undisclosed characteristics of the carbon fibers.

It follows that D15 considered in isolation cannot be of any guidance for the solution of the technical problem.

6.2 As mentioned above (cf. point 4.2), D13 is concerned with fastening devices fabricated from a thermotropic liquid crystalline polymer, e.g. a wholly aromatic polymer, containing up to 50% by weight of a reinforcing agent (Claim 11). These reinforcing agents, which also modify the coefficient of linear expansion of the fastening devices, comprise many treated or untreated, inorganic or organic fibers, in particular carbon fibers (page 9, lines 5 to 16). According to a preferred embodiment (page 3, lines 29 to 35) glass fibers having a number average length of 0.1 to 1 mm and an average diameter of 10 to 13 μm are incorporated into the polymer matrix.

As pointed out by the Patentee in its statement of 25 July 1997 (points IV and V) and during oral proceedings, even if there might have been good reasons to use carbon fibers in view of the very high tensile strength required, there is no suggestion in this citation as to how the number-average length of glass fibers could be related to mould shrinkage

properties of carbon fiber filled compositions.

6.3 The summary of D1 (cf. point 4.1 above) suggests that composite materials show no substantial advantage over the liquid crystal polymer matrix as far as tensile strength, fracture toughness and fatigue crack propagation are concerned. As stated above, although this article contains some information regarding the dimension of glass fibres and the anisotropy in mechanical behaviour of injection-moulded plates, the Opponents failed to demonstrate how a skilled person could or should transpose this knowledge to carbon fibre filled compositions. In fact, the conclusion of the article (page 2898/2899, Summary), which specifies that high anisotropy in mechanical properties is to a large extent determined by the fibre-matrix bonding and that an improvement could be obtained by improving the bond quality, would be an incentive to examine other undisclosed parameters.

Thus, neither the Opponent's calculations, which rely partially on unjustified assumptions, nor the conclusion of D1 would lead a skilled person to consider the specific characteristics required in the patent in suit.

6.4 D4, which Opponent I mentioned as disclosing a relationship between fibre length and moulding shrinkage, cannot be interpreted as such since

(a) it refers to glass fibres and their effect on anisotropy as compared with non-filled polymer and

(b) the mere presence of two properties in one table does not necessarily indicate a link between them.

6.5 For the above reasons, the Board comes to the conclusion that none of the documents relied upon by the Opponents would render obvious the claimed subject-matter, whether considered in isolation or in combination, and that, as a consequence, the subject-matter of Claim 1 involves an inventive step.

7. As Claim 1 of the main request is allowable, the same goes for dependent Claims 2 to 5, the patentability of which is supported by that of Claim 1.

8. Since the Proprietor's main request is granted, there is no need to consider the auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the claims of the main request as submitted on 25 July 1997 after any consequential amendment of the description.

The Registrar:

The Chairman:

E. Görgmaier

C. Gérardin