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D E C I S I O N
of 3 July 2003

Case Number: T 0101/00 - 3.3.3
Application Number: 90106536.7
Publication Number: 0391413
IPC: C08L 69/00
Language of the proceedings: EN

Title of invention:
Filled polymeric blend

Patentee:
THE DOW CHEMICAL COMPANY

Opponent:
Bayer AG, Leverkusen Konzernverwaltung RP Patente Konzern
BASF Aktiengesellschaft, Ludwigshafen

Relevant legal provisions:
EPC Art. 54, 56, 83, 99(1), 100(b), 108, 114(1)
EPC R. 27(1)(a), 55(c), 56(1), 65(1)

Keyword:
"Form of appeal - missing statement of grounds (appeal of
opponent 02)"
"Opposition grounds - insufficiency of disclosure (not
admitted)"
"Novelty (yes)"
"Inventive step (yes) - problem and solution"

Decisions cited:
G 0010/91, T 0002/80, T 0198/84, T 0032/85, T 0222/85,
T 0010/86, T 0002/89, T 0621/91, T 0925/91, T 0939/92,
T 1002/92, T 0274/95, T 1097/98

Catchword:
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Boards of Appeal

Chambres de recours

Case Number: T 0101/00 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 3 July 2003

Appellants:
(Opponent 01)

Bayer AG, Leverkusen
Konzernverwaltung RP
Patente Konzern
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Representative:

-

(Opponent 02)

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Representative:

-

Respondent:
(Proprietor of the patent)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 14 October 1999
and issued in writing on 27 October 1999
rejecting the opposition filed against European
patent No. 0391413 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: R. Young
Members: A. Däweritz
R. Moufang

Summary of Facts and Submissions

- I. The grant of European patent No. 0 391 413 in respect of European patent application No. 90 106 536.7, filed on 5 April 1990 and claiming priority of 7 April 1989 of an earlier application in the United States of America (334411), was announced on 11 December 1996 (Bulletin 1996/50) on the basis of 8 claims.

Independent Claims 1 and 8 as granted read, respectively, as follows:

- "1. A filled polymeric blend comprising:
- (A) from 50 to 80 percent by weight of an aromatic polycarbonate;
 - (B) from 5 to 46 percent by weight of a rubber modified homopolymer or copolymer of a vinyl aromatic monomer;
 - (C) from 4 to 18 weight percent of an inorganic filler selected such that (i) at least 98 weight percent of the filler particles in the final blend have a particle diameter less than 44 μm and (ii) the average filler particle diameter to thickness ratio is from 4 to 24,
- said blend having a coefficient of linear thermal expansion (CLTE) of $3.9 \times 10^{-5}/^{\circ}\text{F}$ ($7.0 \times 10^{-5}/^{\circ}\text{C}$) or less, a dart impact at -29°C (-20°F) of at least 11.3 joules (100 in lb), and a heat distortion temperature under load (DTUL) per ASTM D-648-82 at 66 psi (455 kPa) of at least 110°C (230°F).
8. A fabricated article comprising a polymeric blend according to anyone of Claims 1 to 7."

The remaining Claims 2 to 7 were dependent claims relating to specific embodiments of the above blend.

II. On 10 September 1997, two Notices of Opposition were filed in which revocation of the patent in its entirety was requested. According to the Notice of Opposition of Opponent 01, the claimed subject-matter was not patentable on the grounds set out in Articles 100(a) and (b) EPC, since it did not meet the requirements of Articles 54 and 56 EPC. According to the Notice of Opposition of Opponent 02, the ground of opposition relied upon Article 100(a) EPC, in conjunction with Article 56 EPC. The Oppositions relied on ten documents including

D1: EP-A-0 135 904,

D2: US-A-4 098 734,

D6: EP-B1-0 204 232 and

D7: L. Morbitzer et al., Angew. Makromol. Chem., 1985, volume 132, pages 19 to 42.

III. In a decision dated 14 October 1999 and issued in writing on 27 October 1999, the Opposition Division rejected the oppositions pursuant to Article 102(2) EPC.

(a) In particular, the Opposition Division took the view that the subject-matter of the claims as granted was novel over D1 and D2.

Apart from considerations about the requirements for the acknowledgement of novelty of selection inventions in connection with D1, it was found that the required properties dart impact, heat distortion temperature under load (DTUL) and coefficient of linear thermal expansion (CLTE) were not mentioned in this document. Furthermore, according to the Patent Proprietor, the specific values of these parameters, which were held to be limiting features of the composition claimed, could not even be attained in D1 due to the polyethylene terephthalate (PET) contained in the compositions according to that document.

Novelty was also acknowledged with respect to D2, for the reasons that neither the properties of the inorganic filler, nor those of the compositions were defined in the document. Moreover, polycarbonate was neither a mandatory feature of the known composition, nor was it specified to be aromatic.

- (b) Document D1 represented the closest state of the art, since it related to the same technical field as the patent in suit. In view of a significant increase of the dart impact value at low temperature when increasing the amount of the polycarbonate (PC) from 45 to 55 % by weight, as shown in an experimental report filed during the examination procedure, the decisive distinguishing feature of the subject-matter claimed was the amount of the aromatic polycarbonate in the composition.

Consequently, the technical problem to be solved with respect to D1 was the improvement of the dart impact performance at low temperature of the claimed compositions in comparison to those of D1.

- (c) Document D7 dealt with the effects of varying the content of PC in PC/ABS blends. The publication included measurements of the Izod impact strength and elongation at break under tensile testing conditions.

Hence, this document provided no information which could render the claimed subject-matter obvious.

- (d) The arguments raised by the Opponents on the basis of further submitted experimental data that the effect relied upon for inventive step would not be obtained over the whole scope of the claims (ie within the terms of features (A), (B) and (C) in Claim 1) were not accepted. The decision held that, besides the required composition, also the three parameters, ie dart impact, heat distortion temperature under load (DTUL) and coefficient of linear thermal expansion (CLTE) had to be fulfilled, and, therefore, had a limiting effect on the definition of the claimed subject-matter.

IV. On 14 and 22 December 1999, respectively, Notices of Appeal were lodged by Opponents 01 and 02 against this decision with simultaneous payment of the prescribed fees. A Statement of Grounds of Appeal was received from Opponent 01 on 3 March 2000, wherein it was requested that the patent in suit be revoked for lack of novelty and lack of inventive step.

Since such a statement had apparently not been received in due time from Opponent 02, this party was informed by a Communication pursuant to Article 108 and Rule 65(1) EPC, dated 29 March 2000, that it was to be expected that this appeal would be rejected as inadmissible.

The arguments presented by Opponent 01 (Appellant 01) in the Statement of Grounds of Appeal may be summarised as follows:

- (a) The claimed subject-matter would not fulfil the three requirements for novelty of a selection invention as defined in decision T 198/84 (OJ EPO 1985, 209). The claimed subject-matter would overlap to a significant extent with the ranges of the components in D1, eg that of PC by 38% (ie from 50 to 61.5 % by weight within the range of 50 to 80 % by weight in the patent in suit).

The view taken by the Opposition Division that the percentages of the three components in Claim 1 were to add to 100% whilst, in D1, the percentages were given relative to four components, would not be based on concrete hints in the patent in suit. In view of the open wording of Claim 1 in the patent in suit (due to the term "comprising"), the percentages of the four-component product would usually be recalculated on the basis of the three components common to both products. Under these circumstances, Example 4 of D1 would be within the scope of Claim 1.

The properties of the claimed blends mentioned in Claim 1 (CLTE, dart impact and DTUL) were not limiting, but only descriptive. Impact-modified PC compositions which contained at least 50% of PC were known to show the desired DTUL. The increase in heat distortion temperature was in a direct relation to the content of PC as shown in experimental data submitted in "Anlage 2" to the letter of 18 December 1998 (annexed to the Statement of Ground of Appeal as "Anlage 1").

- (b) The claimed subject-matter did not involve an inventive step in view of D1, D7 and, additionally, D6 which although discussed in oral proceedings before the Opposition Division had not been taken into account in the decision.

Document D1 taught compositions containing PET, PC, impact modifier and talc which showed a high level of impact strength. In Example 4, a talc ("MP-12-50") was used which met the definitions in the patent in suit and was expressly mentioned in its Table 3, Run 6. As shown in the technical report provided by the Respondent (letter of 11 August 1995; annex 2 to the Statement of Ground of Appeal; it will be referred to herein below as "Applicant's experimental report") concerning compositions with different PC/ABS ratios at constant talc filler contents, the allegedly limiting properties of dart impact strength and heat distortion temperature were not only obtained with compositions within the scope of Claim 1 but also outside that range. Moreover, D1 taught already that specific fillers as those defined in

the patent in suit were used for the same purpose, ie to attain a low thermal expansion and a high impact strength.

Moreover, it was known from D7 that the different properties related to impact strength increased in parallel with the amount of PC (Fig. 8(I), 9(I) and 13(I): yield stress, ultimate elongation and notched impact strength). Dart impact was only another measurement of the impact strength.

The formulation of the technical problem in the decision was not correct, but was rather to be seen as improvement of the thermal expansion whilst maintaining good (dart) impact strength (page 2, lines 30 to 32). The solution consisted in the addition of fillers already known from D1.

In summary, it was obvious to combine the teachings of D1 and D7 in order to obtain composition exhibiting the desired properties.

Finally, as regards these properties, the comparative examples filed with the letter of 18 December 1998 demonstrated that, in compositions containing at least 12 % by weight of talc, minor modifications of the rubber content in the ABS impact modifier (12% instead of 20%) caused reduced impact strength below the limit defined in the patent in suit. Hence, it was evident that the scope of the claims extended far beyond the showing in the experimental part of the patent in suit, so that the criteria of Article 56 EPC were not fulfilled (T 939/92; OJ EPO 1996,

309). Due to the open wording and, in particular, the general description of component B in very broad terms, the skilled person was forced to carry out innumerable experiments to find out which compositions were within the ambit of Claim 1. Hence, the subject-matter claimed was not based on an inventive step. Nor did the claims define the matter for which protection was sought (Article 84 EPC).

V. In its reply letter dated 25 September 2000, the Respondent (Patent Proprietor) disputed all the arguments of Appellant 01. Thus, it was set forth that PET, which was a crystalline polymer, constituted a mandatory component of the compositions of D1, whereas, according to the patent in suit, only amorphous polymers might optionally be added to the composition.

Emphasis was further put on the argument that the tests carried out in D7 were mono-axial, whilst dart impact measurements were multi-axial. Moreover, the tests in D7 referred to tensile properties the results of which could not serve to predict dart impact properties. In particular, the notched impact strength in figure 13 of D7 was not dart impact strength. In summary, D7 was not relevant.

VI. Oral proceedings were held on 3 July 2003. By letter of 10 March 2003, the Board had been informed by Appellant 02 (Opponent 02) that it would attend the oral proceedings, but that it did not intend to present arguments. An employee of Appellant 02 who was present informed the Board that it would attend as public, because Appellant 02 did not want to be represented in the oral proceedings. Since all parties had been duly

summoned, the oral proceedings were held as scheduled in the presence of Appellant 01 (Opponent 01) and the Respondent (Patent Proprietor) in accordance with Rule 71(2) EPC.

At the beginning of the oral proceedings, the parties were informed that the appeal of Appellant 02 would presumably be held inadmissible in accordance with Rule 65(1) EPC for the reason of non-compliance with Article 108 EPC. When given the opportunity to comment on this issue, they refrained from doing so.

In addition to the issues already discussed in writing, Appellant 01 further raised the question of sufficiency of disclosure (Article 100(b) EPC).

- (a) On the basis of the reference to Article 100(b) EPC in the Notice of Opposition, the Appellant argued that an objection under Article 100(b) EPC had initially been raised in the opposition and requested that the issue of insufficiency of disclosure should be considered in these proceedings. The relevant passage in the Notice read as follows (page 2, first paragraph):

"Begründung:

Der Gegenstand der Patentansprüche ist aus den im Artikel 100 a) und b) genannten Gründen nicht patentfähig, da er nicht den Erfordernissen von Artikel 54 und 56 EPÜ genügt." (Reasons: The subject-matter of the claims is not patentable for the grounds addressed in Articles 100(a) and (b) EPC, since it does not comply with the requirements of Articles 54 and 56 EPC).

Hence, the ground of opposition under Article 100(b) EPC had been introduced within the nine months opposition period. Further support for this request was seen in the criticisms in the last two paragraphs on page 4 and the single paragraph on page 5 of the Notice of Opposition, that the scope of the main claim extended far beyond what had been shown or made credible by concrete embodiments (section IV(b), final paragraph, above), and that the skilled person had been given no technical teaching as to which fillers concretely complied with the definition of component (C). It was asserted that this passage provided the substantiation required by Rule 55(c) EPC.

Finally, the other Opponent had referred to the formulation of the parameters in Claim 1 as being "aufgabenhaft", ie referring to the problem without providing a solution thereof or to a *desideratum*.

In this connection, the Appellant also referred to Article 114(1) EPC and argued that the European Patent Office was not restricted to the facts, evidence and arguments provided by the parties but should rather examine the facts on its own motion.

- (b) The Respondent disputed these arguments and put emphasis on the facts that all the statements quoted from the written submissions of the Appellant were clearly and only directed to the questions of novelty and of inventive step. Hence, the new issue of alleged insufficiency of

disclosure had not been substantiated as required by Rule 55(c) EPC in due time. Nor had Opponent 02 raised an objection under Article 100(b) EPC.

The Respondent pointed out further that an Opponent had every freedom how to word its Notice of Opposition according to its needs and desires. In this case, the objection under Article 100(b) EPC was raised and substantiated for the first time nearly six years after the filing of the oppositions in the oral proceedings of the appeal procedure, at the end of which a case should normally be ready for decision. No argument had been raised during that long time that the invention could not be carried out. Nor had the tests, which were described in the patent in suit by reference to industrial standards such as ASTM instructions, caused any problems when repeated by the Opponents.

The Board should decide on the facts, evidence and arguments brought before the Opposition Division and the Board by the parties. As a judiciary body, it could not carry out the work which should have been done by the Opponents.

Therefore, such a new objection, which could have been raised in due time (Article 99 EPC), should not be admitted at this late stage of the appeal procedure.

- (c) With reference to the Opinion of the Enlarged Board of Appeals G 10/91 (OJ EPO 1993, 420), the Respondent stated that it would not give its

consent to the introduction of the issue of insufficiency of disclosure, ie a new ground of opposition, in the proceedings.

- (d) The objections of lack of novelty and of inventive step were maintained by Appellant 01 essentially on the basis of the arguments previously submitted in writing. These arguments were disputed by the Respondent.

Thus, particular emphasis was put by the parties on their different positions with respect to the disclosure of D1, including, in particular, the comparability of the physical parameters in D1 with those in Claim 1, the limiting or only descriptive character of the latter, the formulation of the technical problem to be solved with respect to D1, and the question of obviousness of the solution claimed with regard to D1 and D7.

- VII. Appellant 01 requested that the decision under appeal be set aside and that the patent be revoked; further, that the ground of opposition under Article 100(b) EPC be considered in the proceedings.

The Respondent requested that the appeal of Opponent 01 be dismissed and that the patent be maintained (main request) and, as an auxiliary request, in the event that the ground of opposition under Article 100(b) EPC would be admitted to the proceedings, that the case be remitted to the first instance for further prosecution.

Reasons for the Decision

1. *Admissibility*

1.1 Appeal of Opponent 01

Since the formal requirements for appeal have been fulfilled by Opponent 01, its appeal is admissible (section IV, above).

1.2 Appeal of Opponent 02

Article 108 EPC requires that, within four months after the date of notification of an appealed decision, a written statement setting the grounds of appeal must be filed.

1.2.1 However, no such statement has been received from Opponent 02. Nor has this Opponent reacted to the Communication pursuant to Article 108 and Rule 65(1) EPC issued on 29 March 2000. In fact, the only statement from this party up to the oral proceedings was the letter dated 10 March 2003 announcing that it would attend the oral proceedings, but did not intend to argue. Nor was the party represented in the oral proceedings.

1.2.2 Consequently, the appeal by Opponent 02 was rejected as inadmissible (Rule 65(1) EPC).

2. *Article 100(b) EPC*

2.1 In the present case, it is not the question of whether the oppositions as such had been admissible, but only

whether an objection under Article 100(b) EPC, mentioned in the Notice of Opposition of Opponent 01, but never dealt with during the opposition proceedings or in the decision of the Opposition Division, could be considered in these appeal proceedings for the first time.

2.2 The present case is different from that in Decision T 274/95 (OJ EPO 1997, 99) wherein the objection in question had been substantiated in the Notice of Opposition but was subsequently not maintained during the opposition proceedings. The Board held that such an objection could be re-introduced into the appeal proceedings under certain circumstances (Headnotes I and II).

In the present case, however, the question is whether the objection under Article 100(b) EPC was presented in the Notice of Opposition within the period according to Article 99(1) EPC in such a way that the requirements of Rule 55(c) EPC for the admissibility of an opposition and the establishment of the legal and factual framework had been fulfilled to the extent that the objection at issue could be dealt with in the present appeal proceedings in the light of the Opinion of the Enlarged Board of Appeal G 10/91 (above; Reasons: points 15 to 18 in conjunction with points 6, last two sentences, and 13, "... which have been both alleged and properly supported as required by Rule 55(c) EPC").

The question of admissibility has been dealt with in numerous decisions by different Boards (see Case Law of the Boards of Appeal of the EPO, 4th edition 2001, chapter VII-C.8.5).

According to established case law, an objection raised in opposition must be substantiated in the Notice of Opposition in such a way that the facts and arguments are sufficient for the EPO and the patent proprietor to understand the case against the patent without further investigation (T 2/89; OJ EPO 1991, 51, point 3 of the reasons). In decision T 222/85 (OJ EPO 1988, 128), the Board held that the requirement in Rule 55(c) EPC was only satisfied if the contents of the Notice of Opposition were sufficient for the opponent's case to be properly understood on an objective basis (reasons: point 4, "... so that both the patentee and the Opposition Division know what the case is"; and point 5, "... a deficient submission may be rejected as inadmissible even though if properly drafted it would have succeeded"). This position has been confirmed in a number of further decisions, eg in T 925/91 (OJ EPO 1995, 469) and T 1097/98 of 2 February 2000, point 2 of the reasons, and T 621/91 of 28 September 1994, in particular point 3.1 of the reasons. In this latter decision (point 5 of the reasons), the Board additionally stated that an opponent/appellant cannot be successful in inviting the Opposition Division to carry out further searches *ex officio*, in the hope that it would formulate some arguments of its own accord on the basis of its findings. "This task, however, was that of the Appellant within the available nine month period for filing the Notice of Opposition."

2.3 As pointed out by the Respondent during the oral proceedings (section VI(b), above), mention of Article 100(b) EPC was made in the Notice of Opposition of the

Appellant only once in relation to objections of lack of novelty and of inventive step. The relevant statement is quoted in section VI(a), above. It is ambiguous and, taken on its own, it is not clear whether this statement was worded in this way intentionally or by mistake.

2.4 Therefore, the further facts, evidence and arguments provided in the Notice of Opposition must be considered.

2.4.1 To support its case, the Appellant referred to passages on pages 4 and 5 of the Notice criticising the breadth of the claim as extending far beyond of what had been supported by evidence of concrete embodiments, further criticising a lack of technical teaching as to which fillers would in fact comply with the definition of component (C) of the claim and asserting that the claims would encompass embodiments the patentability of which would not be supported by (technical) effects. The Opponent/Appellant also referred to decision T 939/92 (above) in this context.

2.4.2 However, on the one hand, the above passages in the Notice of Opposition are part of a section with the heading "Erfinderische Tätigkeit" (inventive step). On the other, the decision in *ex parte* case T 939/92 clearly deals with the questions of whether a relevant effect is obtained over the whole range claimed in terms of Articles 84 and 56 EPC, ie (i) clarity of the claims and their support in the description, and (ii) inventive step, but not in terms of sufficiency.

2.4.3 These requirements (i) and (ii) are also the true basis for the objections in the passages on page 4 and 5 of the Notice of Opposition, where it was argued that the claim would be too broad, the scope of the definition of the filler would not be concrete enough, and the technical problem (to achieve a certain technical effect) would not be solved within the whole range of the claim.

2.4.4 Confirmation for this conclusion can be found in the Statement of Grounds of Appeal (page 7; referred to in the last paragraph in section IV(b), above), which also demonstrates that the above statements were clearly not presented in order to support an intended objection under Article 100(b) EPC.

2.4.5 Furthermore, from all the decisions mentioned above, it is clear that the requirements of sufficient substantiation must be fulfilled within the nine month period in Article 99(1) EPC. According to Rule 56(1) EPC, non-compliance with the provisions of Article 99(1), Rule 1(1) and Rule 55(c) EPC shall result in a rejection of the opposition as inadmissible unless these deficiencies have been remedied *before expiry of the opposition period* (emphasis added).

It follows that such relief cannot be derived from actions and statements after the nine month opposition period, eg later filed experimental reports. Nor can an exemption from overcoming such deficiencies be found in the statements or actions of another party. Instead, the submissions of a party, which are necessary to meet the legal requirements in the EPC, must be self-contained.

2.4.6 Therefore, the Board finds that the Opposition Division and the Patent Proprietor could derive from the Notice of Opposition only that the issues to be considered in the opposition proceedings were confined to novelty and inventive step.

2.4.7 The objection under Article 100(b) EPC is therefore a new ground of opposition which, in accordance with G 10/91 (above), cannot be considered in these appeal proceedings without the approval of the Respondent-Patent Proprietor. The Respondent *expressis verbis* disapproved this new ground to be discussed in these proceedings (section VI(c), above).

2.5 Consequently, the objection under Article 100(b) EPC is excluded from further consideration and the request of the Appellant to introduce this issue into the proceedings is rejected.

Decisions T 32/85 and T 10/86 (dated 5 June 1986 and 1 September 1988, respectively) referred to by the Appellant do not change the situation as described above, since they deal with substantive questions of Article 83 EPC (cf section 2.2, above).

3. *Problem and Solution*

3.1 The patent in suit concerns filled polymeric blends.

3.2 Document D1, which has been considered as closest state of the art by the Appellant and the Opposition Division, relates to polyethylene terephthalate/polycarbonate (PET/PC) blends having a low level of warpage whilst

maintaining a high level of impact strength (page 1, lines 9 to 14). The blends comprise (i) a high molecular weight thermoplastic PET, (ii) a high molecular weight thermoplastic aromatic PC resin, (iii) a graft modified butadiene based rubber having a glass transition temperature of below about 10°C and (iv) a warpage reducing amount of talc (Claim 1).

In Claim 2, the percentages of the amounts of these mandatory components are specified to be within the following ranges, relative to the weight of the blend: (i) about 30 to 89.5%, (ii) about 5 to 61.5%, (iii) about 5 to 50% and (iv) about 0.1 to 4%.

3.2.1 The composition may further include crystallisation rate promoters for the polyester to allow lower mould temperatures and shorter injection cycles (page 4, lines 4 to 9). Whilst the Respondent identified PET as being crystalline (letter dated 25 September 2000, page 2, line 13), the technical expert of the Appellant indicated that by choosing appropriate process parameters during its preparation the ratio between crystalline and amorphous areas of this polymer could be adjusted.

In view of these statements of the parties and the reference to improvements related to easier crystallisation in D1, the Board cannot refute the statement of the Respondent that PET as used in D1 was at least partly crystalline.

On page 2, lines 3 and 4 of the specification, however, the compositions of the patent in suit are described as comprising an amorphous polymer matrix and an inorganic

filler. These blends may be further compounded with additional amorphous polymers, such as thermoplastic polyurethanes, amorphous polyesters and polyarylate resins (page 4, lines 2 to 4).

It follows that it has not been established that these latter requirements would be fulfilled by PET as disclosed in D1.

- 3.2.2 Apart from PET, the other two polymeric components (ii) and (iii) of D1 comply with the definitions of components (A) and (B), respectively, in the patent in suit (patent in suit: page 2, lines 56/57; page 3, lines 5 to 29, in particular line 29; D1: page 5, line 27 to page 9, line 23; page 3, line 24 to page 14, line 10, in particular page 10, lines 23 to 25). This was not in dispute.

A specific commercial product ("MP-12-50") is recommended to be used as the talc (D1: page 14, lines 11 to 13, in particular, line 13) which was also used in examples of the patent in suit: Table 3, Runs 6, 9 and 12.

- 3.2.3 In the examples of D1, two specific polymer blends of 3 lb of PET, 2.5 lb of PC and 1.5 lb of a graft polymer (ABS and MBS, respectively) were used with different amounts of talc. On the basis of the amounts given on page 17, lines 1 to 3, it is evident that the content of PC in the compositions according to the examples is always significantly less than 50% by weight (irrespective of the presence or absence of talc) of the total weight of the compositions (Table 1). Hence, none of the examples of D1 fulfils the quantitative

requirements in the first part of Claim 1 of the patent in suit, in particular feature (A) requiring 50 to 80 % by weight of PC.

3.2.4 In view of T 2/80 (OJ EPO 1981, 431), "... as regards claims for a mixture, ... proportions given for each constituent must add up to the requisite total (100% in the case of percentages) for each composition claimed" (point 3 of the reasons), the Board does not concur with the argument of the Appellant that the percentages in D1 should be recalculated to the basis of the "three common components" (Statement of Grounds of Appeal: page 2, last paragraph). Such a recalculation could only be done on the basis of information, which is not derivable from the document itself, in the present case D1, but only in the knowledge of the patent in suit or in other words by inadmissible hindsight.

3.2.5 As far as the second part of Claim 1 is concerned, the properties of the compositions in Table 1 of D1 are evaluated in terms of their notched Izod impact strengths (at 23°C) as moulded and after heating, and their warpage.

Whilst the Appellant argued at the oral proceedings that the warpage (given in mm) should be seen as relating to the same property as the coefficient of linear thermal expansion (CLTE) which is expressed in terms of $(^{\circ}\text{C})^{-1}$ or $(^{\circ}\text{F})^{-1}$, it is clear that "warpage" refers to twisting out of shape and (permanent) distortion, but not to a measurement for the reversible thermal expansion and contraction. These properties are, evidently, not linked to each other in a linear way.

Moreover, no mention is made in D1 of heat distortion temperature under load or dart impact strength of any composition containing PC in amounts within the broad range of from 5 to 61.5 % by weight (D1, Claim 2).

The property of heat distortion is mentioned in D1 only with reference to the state of the art in connection with an improvement of the HDT of certain polyesters by means of talc (page 1, line 29) and in relation to copolymers which may be contained within the ambit of the "graft polymer". The latter are preferably "materials having high heat distortion temperatures as is the case when α -methylstyrene acrylonitrile copolymers are added". Hence, D1 is silent with respect to DTUL of the blend.

3.2.6 Furthermore, the measurements of notched Izod impact strength and dart impact strength cannot be directly compared with each other. This is already evident from the different measuring units of these parameters (D1: J/m; patent in suit: J). This view is also supported by "Applicant's experimental report", when comparing the trend of changes of the measurements according to the two methods (at -20°F) with each other:

Run	Dart impact			notched Izod		
	lb	incremental changes	changes relative to Run 2	ft lb/in	incremental changes	changes relative to Run 2
2	271	-	-	1.5	-	-
3	417	+53%	+53%	1.8	+20%	+20%
4	494	+18%	+82%	1.9	+6%	+27%
5	558	+13%	+106%	1.9	0%	+27%
6	554	-1%	+104%	1.8	-5%	+20%

Contrary to the view taken by the Appellant, it is evident to the Board that the two measurements are not parallel to each other, which is shown, in particular, by a comparison of the trends in the results of Examples 3, 4 and 5.

3.2.7 It must therefore be concluded that warpage cannot provide any hint as to the property of CLTE, nor can the measurement of notched Izod impact strength at 23°C after moulding or after heating allow any conclusion to be made with regard to dart impact resistance at -29°C.

3.3 In line with the introductory part of the patent specification, the technical problem underlying the patent in suit may thus be seen in the provision of filled polymeric blends on the basis of aromatic PC, which exhibit a specific combination of certain thermal and mechanical properties which makes them particularly useful for moulded objects, even in extreme heat conditions (page 2, lines 4 to 7 and 18 to 35).

3.4 According to the patent in suit, this technical problem is solved by a blend comprising (A) from 50 to 80% by weight of an aromatic polycarbonate, (B) from 5 to 46% by weight of a rubber modified homopolymer or copolymer of a vinyl aromatic monomer, and (C) from 4 to 18% by weight of an inorganic filler (as defined in Claim 1), which blend has a CLTE of $7.0 \cdot 10^{-5}/^{\circ}\text{C}$ or less, a dart impact at -29°C of at least 11.3 J, and a DTUL at 455 kPa of at least 110°C (ASTM D-648-82).

This finding is not compromised by one individual dart impact value (curve l_1 , 10 wt% of filler) shown in the schematic Figure 2. As pointed out by the Respondent, no exact value can be derived from the figure, nor from Experiment 4 to which the figure corresponds.

Consequently, it can only be derived that there is one value lying close to the indicated lower limit of the dart impact range as defined in Claim 1. Numerous other examples in the patent in suit and in the "Applicant's experimental report", the results of which *per se* were never disputed, demonstrate, however, that the goal is indeed achieved. Hence, the Board is satisfied that the technical problem is effectively solved by the claimed subject-matter.

4. *Novelty*

4.1 The patent in suit relates to moulding compositions comprising an amorphous polymer matrix and an inorganic filler and showing a combination of specific properties which makes them suitable for the production of parts having large surfaces, in particular, in the production of exterior automotive body panels (page 2, lines 3 to 9). The required properties are a reduced coefficient of linear thermal expansion (CLTE), a high dart impact resistance and good resistance to the effects of heat in terms of DTUL.

4.2 As shown in the above sections 3.2 to 3.2.6, D1 is completely silent with respect to these specific properties, in particular their specific combination. The properties reported in D1 (warpage and notched Izod strength) are not equivalent to the above parameters CLTE and dart impact resistance. DTUL is not even

mentioned for the blends of D1. Consequently, the relevant parameters CLTE, dart impact at -29°C and DTUL cannot be regarded as disclosed by D1.

4.3 The argument of the Appellant, that the ranges of the above parameters in Claim 1 would not be limiting, but only descriptive and, therefore, could not serve to delimit the claimed subject-matter from the prior art, is not supported by the experimental data as submitted with the letter of 18 December 1998. Rather, these data show convincingly that the required values of the three parameters within the ranges as defined in Claim 1 are not inherent characteristics, but relate to mandatory features which must be regarded as fully limiting (Statement of Grounds of Appeal: paragraph bridging pages 6/7; letter dated 6 September 1999: page 1, paragraph 3; letter of the Respondent dated 25 September 2000: page 2, line 6 from below, to page 3, paragraph 1). Moreover, it has not been shown by the Appellant, with whom the onus of proof lay, that these parameters were actually fulfilled by any one of the blends disclosed in D1, including their mandatory component PET.

4.4 For these reasons, the subject-matter claimed in Claim 1 is novel.

5. *Inventive step*

It remains to be decided whether the solution found was obvious to a person skilled in the art having regard to the state of the art relied upon by the Appellant.

5.1 As shown in sections 3.2 to 3.2.6, above, document D1 relates to PET/PC blends having a low level of warpage whilst maintaining a high level of impact strength in terms of notched Izod impact strength measured at 23°C, but is silent about any other properties, in particular the combination of the specific parameters CLTE, DTUL, and dart impact resistance at low temperature (-29°C) required for the compositions according to Claim 1 of the patent in suit.

5.1.1 The subject-matter of D1 is based on the combination of three mandatory polymeric components, ie high molecular weight PET, a high molecular weight PC and a graft modified butadiene based rubber, and talc (Claim 1). The document does not consider any compositions containing less than 30% of PET, whilst the minimum amounts of the other two polymeric components may be as low of 5% (Claim 2; page 15, lines 24 to 32; page 17, lines 1 to 3).

5.1.2 Moreover, as pointed out in section 3.2.3, above, a constant ratio of the amounts of the three mandatory polymeric components was used in the examples in D1, which in any case includes only significantly less than 50% by weight of PC.

Hence, no information can be obtained from the data in these examples about the properties of blends of 50 to 80% by weight of aromatic PC, 5 to 46% by weight of a rubber modified homopolymer or copolymer of a vinyl aromatic monomer and 4 to 18% by weight of an inorganic filler (as defined in Claim 1 of the patent in suit), let alone about the required properties expressed in

terms of the above parameters which are different from those in D1 (section 5.1, above).

Rather, the examples indicate that the addition of increasing amounts of talc results in a significant deterioration of the notched Izod impact strength values at 23°C (ranging from 731.6/747.6 J/m in Example 1 to 704.9/843.7 J/m in Example 3, 309.7/480.6 J/m in Example 4 and 170.9/256.3 J/m in Example 5, with 0, 3.21, 4.28, 6.42 phr of talc, respectively) and, above a certain level of filler, impairs the warpage (0.7, 0.6 and 1.2 mm, respectively).

5.1.3 In summary, the Board does not see any hint in D1 that any one of the mandatory polymeric components, in particular PET, might be omitted from the PET/PC blends of D1 in order to obtain a product showing the specific pattern of properties required in the patent in suit, let alone to arrive at a composition within the terms of Claim 1. On the contrary, the most the skilled person would be able to derive from the data available in D1 that the warpage reducing amount of talc of 0.5 to 4% relative to the composition, should not be exceeded (D1: Claim 2).

5.1.4 In other words, D1 does not provide any incentive to modify its PET/PC compositions in the direction of the claimed subject-matter for any reason, let alone in order to solve a technical problem, which, in any case, is not addressed in the document (section 3.3, above). Hence, the solution of the technical problem does not arise in an obvious way from the disclosure of D1.

5.2 Document D7, in particular page 34, last paragraph and page 35, Figure 13(I), was referred to by the Appellant in order to show that the notched impact strength of PC/ABS compositions measured at -20°C was known to increase with PC contents growing up to a maximum of about 80 %. These blends consist only of PC, a standard SAN and a polybutadiene-SAN graft polymer (see points 2 to 2.2, page 21/22 of the document).

According to the Appellant, the document provides the incentive to use blends having high PC contents in order to attain high toughness (for which impact strength would be a measurement).

However, as emphasised by the Respondent, D7 does not refer to composition containing a filler, which, according to D1, impairs the impact strength. Hence, this document cannot provide any pertinent information for filled blends, let alone for a modification of the blends of D1 in order to solve the relevant technical problem and thereby to obtain the specific blend according to Claim 1 of the patent in suit.

Consequently, the teaching of D7 cannot remedy the above deficiencies of D1 with regard to the question of inventive step, but rather is inconsistent with the teaching of D1.

5.3 In the Statement of Grounds of Appeal, the Appellant referred additionally to D6 to support its objection under Article 56 EPC.

5.3.1 This document was, however, only published on 8 August 1990, ie after the filing date of the patent in suit.

Therefore, it is not state of the art. It is true that the patent application from which this document is derived had been published before that relevant date, but reference to the application, which has not been in the opposition and appeal proceedings, was made for the first time in the oral proceedings, when the issue of late publishing had been addressed by the Board.

5.3.2 The Appellant could not provide any argument why the pre-published application corresponding to D6 would be so relevant that it was to be admitted to the proceedings. The Respondent disputed that this new document should be considered in the appeal proceedings. Nor does the Board regard its contents as sufficiently relevant to merit its introduction into the proceedings at this stage (T 1002/92, OJ EPO 1995, 605).

5.3.3 Consequently, the application corresponding to D6 as sought to be introduced was submitted too late and is disregarded according to Article 114(2) EPC.

6. In summary, none of the prior art documents relied upon by the Appellant, by itself or in combination with each other, renders the subject-matter of Claim 1 obvious.

Therefore, the claimed subject-matter involves also an inventive step (Article 56 EPC).

7. By the same token, the article of Claim 8 which comprises the above composition, and the blends according to Claims 2 to 7 appendant to Claim 1 are also novel and involve an inventive step.

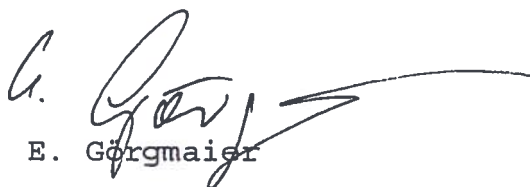
8. Since the main request of the Respondent is successful, there is no need to consider the auxiliary request.

Order

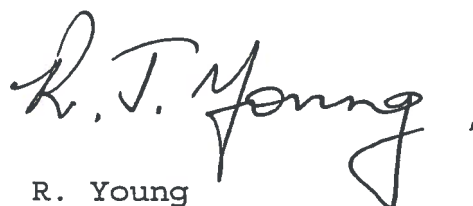
For these reasons it is decided that:

1. The appeal of Opponent 02 (BASF AG) is rejected as inadmissible.
2. The appeal of Opponent 01 (Bayer AG) is dismissed.

The Registrar:


E. Görgmaier

The Chairman:


R. Young