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D E C I S I O N
of 22 April 1999

Case Number: T 0644/97 - 3.3.3

Application Number: 88908377.0

Publication Number: 0338085

IPC: C08G 64/06

Language of the proceedings: EN

Title of invention:

Process for preparing crystallized aromatic polycarbonate and crystallized aromatic polycarbonate obtained by the process

Patentee:

Asahi Kasei Kogyo Kabushiki Kaisha

Opponent:

Bayer AG, Leverkusen Konzernverwaltung RP Patente Konzern

Headword:

-

Relevant legal provisions:

EPC Art. 56, 108

Keyword:

"Admissibility of appeal (yes)"
"Inventive step (yes) - different starting point in prior art
- formulation of technical problem - solution non-obvious"

Decisions cited:

T 0150/82, T 0229/85, T 0248/85, T 0246/91, T 0495/91,
T 0686/91, T 0325/93, T 1007/95

Catchword:

The technical problem arising from a "closest state of the art" disclosure which is irrelevant to the claimed subject-matter in the sense that it does not mention a problem that is at least related to that derivable from the patent specification has a form such that its solution can practically never be obvious, because any attempt by the skilled person to establish a chain of considerations leading in an obvious way to the claimed subject-matter gets stuck at the start. It follows that the respective claimed subject-matter is non-obvious in the light of such art.



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Boards of Appeal

Chambres de recours

Case Number: T 0644/97 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 22 April 1999

Appellant: Bayer AG, Leverkusen
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Representative: -

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 18 February 1997,
issued in writing on 27 March 1997 rejecting the
opposition filed against European patent
No. 0 338 085 pursuant to Article 102(2) EPC.

Composition of the Board:

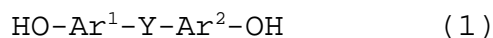
Chairman: C. Gérardin
Members: R. Young
J. C. M. De Preter

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 338 085, in respect of European patent application No. 88 908 377.0, based on International application No. PCT/JP88/00989 (International publication No. WO 89/02904), filed on 28 September 1988 and claiming a JP priority of 28 September 1987 (JP 243000/87) was published on 22 June 1994 (Bulletin 94/25). Claim 1 reads as follows:

"A method for producing a crystallized aromatic polycarbonate which comprises the steps of:

(1) heating a mixture of a dihydroxydiaryl compound and a diaryl carbonate at a temperature sufficient and for a period of time sufficient to prepare a prepolymer having a weight average molecular weight of from 2,000 to 20,000 and having terminal aryl carbonate groups, said dihydroxydiaryl compound comprising from 85 to 100 mole % of a dihydroxydiaryl alkane represented by the formula:



wherein each of Ar¹ and Ar² independently represents a divalent carbocyclic or heterocyclic aromatic group, and Y represents a divalent alkane group, and from 0 to 15 mole % of a dihydroxydiaryl derivative other than said dihydroxydiaryl alkane, said terminal aryl carbonate groups being present in an amount of greater than 50 mole %, based on the total number of moles of all the terminal

groups of the prepolymer;
(2) crystallizing said prepolymer to a crystallinity of from 5 to 55 %; and
(3) heating the crystallized prepolymer at a temperature which is higher than the glass transition temperature of said crystallized prepolymer and at which said crystallized prepolymer is in a solid state, thereby increasing the weight average molecular weight of the crystallised prepolymer to from 6,000 to 200,000 so that the resultant polymer has a weight average molecular weight which is greater than that of said prepolymer obtained in step (1)."

Claims 2 to 25 are dependent claims directed to elaborations of the method according to Claim 1.

Claim 26, an independent claim, is worded as follows:

"An aromatic polycarbonate having a weight average molecular weight of from 6,000 to 200,000 and having a terminal hydroxyl group content of not greater than 0.03 % by weight, based on the weight of the polycarbonate, prepared from a mixture of a dihydroxydiaryl compound and a diaryl carbonate, said dihydroxydiaryl [sic] compound comprising from 85 to 100 mole % of a dihydroxydiaryl alkane represented by the formula:



wherein each of Ar¹ and Ar² independently represents a divalent carbocyclic or heterocyclic aromatic group, and Y represents a divalent alkane

group,
and from 0 to 15 mole % of a dihydroxydiaryl
derivative other than said dihydroxydiaryl alkane,
which aromatic polycarbonate has a crystallinity of
at least 5%."

Claims 27 and 28 are dependent claims directed to
elaborations of the aromatic polycarbonate according
to Claim 26.

II. Notice of Opposition was filed on 26 January 1995 on
the grounds of lack of novelty and inventive step.
The opposition was supported *inter alia* by the
documents:

E1: DE-A-3 429 960;

E5: US-A-3 390 134; and

E6: JP-A-51-26043, considered in the form of its
English translation.

III. By a decision which was given at the end of oral
proceedings held on 18 February 1997, issued in
writing on 27 March 1997, and corrected, under
Rule 89 EPC, as to the wording of Claim 26 in
Annex II of the decision, by a notification issued on
20 June 1997, the Opposition Division rejected the
opposition.

(a) According to the decision with regard to the
subject-matter of method Claims 1 to 25, the
novelty of which had not been disputed, this also
involved an inventive step, for the following

reasons. The closest state of the art was not E5, as canvassed by the Opponent, since this related to a completely different technical field (polyesters), but on the contrary E6. Whilst the only distinction over E6 was the amount of hydroquinone, which could be up to 15 mole% according to Claim 1 compared to at least 30 mole% in E6, it was apparent from E6 that **crystalline** polycarbonates were only obtained with an amount of more than 70 mole% of hydroquinone, whereas lower amounts led to **amorphous** polycarbonates. Therefore, the skilled person would expect that the amounts of bisphenol-A required in the patent in suit would lead to an amorphous product.

(b) As regards the alleged lack of novelty of the subject-matter of product Claims 26 to 28, the results of repeating Examples 1, 2 and 3 of E1 which formed the basis of the case against these claims could not be accepted, because certain relevant information was missing from the examples themselves, and quite apart from this, the interfacial polymerisation process disclosed in E1, which used phosgene, would necessarily have given rise to the presence of chloroformate groups and hence of non-purity chlorine atoms. Consequently, the subject-matter of these claims was novel.

(c) As to inventive step, the different chemical structure of the polycarbonates obtained according to the process of E1 meant that the closest state of the art was still E6, and an

inventive step could be recognised for reasons analogous to those given in relation to Claim 1.

IV. On 15 May 1997, a Notice and Statement of Grounds of Appeal against the above decision was filed, together with payment of the prescribed fee.

In the Statement of Grounds of Appeal, the Appellant (Opponent) argued in substance as follows:

- (a) The method claimed in the patent in suit resulted in polycarbonates which were not, as such, industrially applicable. On the contrary, they were first converted to colourless transparent polycarbonates, which had not been claimed as such, but were in any case known in the state of the art. A process which led to known products was only patentable, however, on the basis of a peculiarity of the process itself. The claimed process was analogous to, and therefore obvious in the light of, that disclosed in E5.

- (b) The experimental evidence filed had been intended to show that the examples of E1 were repeatable, a fact which was confirmed by the existence of corresponding European patent No. 0 175 118. Thus, the decision under appeal had applied different and inconsistent criteria to the assessment of one and the same document. This was not permissible, however, since the wording relating to disclosure was the same in Articles 83 and 100(b) as in Article 54 EPC. Consequently, the subject-matter of Claims 26 and 28 at least of the patent in suit lacked novelty

in view of E1.

The submission was accompanied by an experimental report relating to the repetition of the examples of E1.

- V. The Respondent (Patentee) argued, in a submission filed on 23 January 1998, substantially as follows:
- (a) The conversion of the products of the process to a transparent form was not cumbersome, but required only a moulding step; there was in any case no lack of inventive step with regard to E5, for the reasons given in the decision under appeal; reference was additionally made to a submission to the Opposition Division of 13 November 1995.
 - (b) The Appellant's alleged replication of the examples of E1 had no validity, for the reasons given in the decision under appeal; reference was also made to a submission to the Opposition Division of 15 January 1997.
- VI. Oral proceedings were held on 22 April 1999.
- (a) At the oral proceedings, the Respondent for the first time argued that the appeal should be held inadmissible, since it was not based on the same grounds as had been dealt with in the decision under appeal, and, to the extent that the grounds were the same, no arguments had been brought beyond those already held to be unsuccessful in the decision under appeal.

- (b) The Appellant thereafter withdrew the new opposition ground of lack of industrial applicability, and furthermore indicated that it no longer contested the novelty of the subject-matter claimed in Claims 26 to 28 of the patent in suit.
- (c) The subsequent discussion centred on the issue of inventive step, with the Appellant arguing that the subject-matter of the product claimed in Claims 26 to 28 was obvious starting from E1 as closest state of the art, in combination with the teaching of E6, and the subject-matter of the method claimed in Claims 1 to 25 was obvious, as an "analogy process", also in the light of E6.
- (d) The Appellant wished it to be put on record that, according to the Respondent, the aromatic polycarbonate according to Claim 26 had actually to be prepared from a mixture of a dihydroxyaryl compound and a diarylcarbonate.

VII. The Appellant requested that the decision under appeal be set aside, and the patent in suit revoked in its entirety.

The Respondent requested firstly that the appeal be rejected as inadmissible, and auxiliarily that the appeal be dismissed.

Reasons for the Decision

1. *Admissibility of appeal*

Whilst it is true that the Statement of Grounds of Appeal referred to a new ground of opposition (lack of industrial applicability), which had not been substantiated in the sense of Rule 55(c) EPC, and was subsequently withdrawn by the Appellant (Opponent), and also cited a non-prior art document for the first time, the remainder of the appeal is nevertheless concerned with issues addressed in the decision under appeal. In particular, the arguments (a) that the method according to Claim 1 was rendered obvious by the process steps taught in E5, and (b) that the assessment of the comparative experiments based on E1 had been incorrect, so that a product made according to the method exemplified in E1 was novelty-destroying for the subject-matter of Claim 26, were re-emphasised. Consequently, the appeal satisfies the criterion of stating why in the Appellant's view the contested decision cannot be valid (T 1007/95 of 17 November 1998, to be published in OJ EPO).

The argument of the Respondent, that the points made in the Statement of Grounds of Appeal did not go beyond those made before the Opposition Division, does not itself detract from the admissibility of the appeal. Indeed, a requirement that new arguments must be submitted to render an appeal admissible would imply that the appealed decision, as issued, had necessarily been correct. Nor is it a condition of admissibility that the appeal have a strong prospect of success. Finally, the subsequent withdrawal of a relevant objection already substantiated in the Statement of Grounds of Appeal (lack of novelty of

the subject-matter of Claims 25 to 28 in the present case) cannot retrospectively detract from the admissibility of the appeal as filed.

In summary, the appeal complies with Article 108 EPC and is consequently admissible.

2. *The patent in suit; product aspect (Claims 26 to 28)*

The patent in suit is concerned, in its product aspect, with the provision of a high-quality aromatic polycarbonate having a high molecular weight, a low impurity level, little colouration and a good resistance to heat and boiling water (page 2, lines 11 to 13).

2.1 Such a polycarbonate is defined in terms of the starting materials from which it has been prepared (by transesterification), its molecular weight, its content of terminal hydroxyl groups and in particular its degree of crystallinity, as set out in Claim 26 (section I, above). The product is thus defined partly in terms of its characteristics, and partly in terms of its process of manufacture (product-by-process claim).

This form of claim does not limit the product to the process of preparation, contrary to the remark of the Appellant at the oral proceedings (section VI, above), but rather, according to the established case law of the Boards of Appeal, to the product *per se* with all its internal characteristics and the consequences of its history of origin (T 0150/82, OJ EPO 1984, 309).

The claimed polycarbonate has been found, according to the decision under appeal, to be novel, a finding to which the Appellant at the oral proceedings explicitly withdrew all objection. Consequently, the only remaining issue to be decided in respect of this subject-matter is whether it involves an inventive step having regard to the state of the art.

2.2 An aromatic polycarbonate having a low impurity level is admittedly known from E1, which, according to the Appellant at the oral proceedings, represented the closest state of the art for this aspect. The Board cannot, however, concur with the Appellant's choice of closest state of the art, at least to the extent that no explicit challenge was offered by the Appellant to the logic of the choice, in the decision under appeal, of E6 as the closest state of the art, the latter document being held to differ from the claimed subject-matter only in respect of one feature, namely the degree of crystallinity of the polymer formed (Reasons for the decision, point 5.1).

2.3 Nevertheless, the Board is prepared, for the sake of completeness, to consider the matter from the point of view of the Appellant. This involves, initially, considering to what extent E1 constitutes the closest state of the art in the sense of being an appropriate starting point for the derivation of a relevant technical problem.

In this connection, the Boards of Appeal have held on more than one occasion that an objective definition of the technical problem to be solved should normally start from the technical problem actually described

by the Applicant. Only if it turns out that the technical problem disclosed has not in fact been solved, or that an incorrect state of the art was used to define the technical problem, can an inquiry be made as to which other technical problem objectively existed (see T 0246/91 of 14 September 1993, and T 0495/91 of 20 July 1993, neither published in the OJ EPO).

2.4 In the present case, it is consequently necessary to address the following questions:

- (a) whether the technical problem described in the patent in suit is effectively solved; and
- (b) whether this was the correct problem to consider.

2.4.1 As to question (a), the technical problem as formulated in the patent in suit is to be seen in the provision of a high molecular weight polycarbonate which is substantially completely free of impurities, in particular chlorine compounds, is colourless, and has high resistance to heat and boiling water (page 2, lines 9 to 11).

The solution proposed according to Claim 26 of the patent in suit is to provide a polycarbonate prepared by transesterification, specifically from a mixture of a dihydroxydiaryl compound and a diarylcarbonate, the latter comprising from 85 to 100 mole% of a dihydroxydiaryl alkane represented by the formula:



wherein each of Ar¹ and Ar² independently represents a divalent carbocyclic or heterocyclic aromatic group, and Y represents a divalent alkane group,

and from 0 to 15 mole % of a dihydroxydiaryl derivative other than said dihydroxydiaryl alkane, the resulting aromatic polycarbonate having

- (i) a terminal hydroxy group content of not greater than 0.03%, based on the polycarbonate; and
- (ii) a crystallinity of at least 5%.

2.4.1.1 It is evident, from the examples and comparative examples given in the patent in suit, that the claimed products, which are crystalline, are superior in heat stability and resistance to hot water, as well as in purity of colour, to variants differing in that they are amorphous. In particular, according to Example 1, a test piece of a polycarbonate, prepared from bisphenol A and diphenyl carbonate, of weight average molecular weight (Mw) of 28 000, hydroxy terminal group content of 0.001 wt% and treated to have a degree of crystallinity of 30%, produced, when subjected to injection moulding, a product which was colourless, transparent and tough, and after treatment with boiling water at 120°C for 50 h in an autoclave showed no discolouration and still had a Mw (weight average molecular weight) of 25 000, compared with a polycarbonate of similar molecular weight which had been prepared from identical starting materials but which had not been so treated, and was therefore amorphous, which had a hydroxy terminal group content of 0.08 wt%, was of yellowish colour

and the Mw of which had been reduced to 18 000 after treatment with boiling water (Comparative Example 1). It is thus credible that the claimed measures provide an effective solution of the stated problem.

2.4.1.2 Consequently, the condition in question (a) for departing from the statement of problem in the patent in suit is not fulfilled.

2.4.2 As to question (b), this boils down to whether there is a state of the art lying closer to the claimed subject-matter than that from which the technical problem described in the patent in suit has been derived. To answer this, it is necessary first of all to consider what is disclosed in E1.

2.4.2.1 According to E1, there is provided a process for the isolation of a thermoplastic polycarbonate based on bisphenol A, from its purified solution in an organic solvent, in which a polycarbonate which has been prepared by the phase boundary process is treated with vapours of benzene or an alkylbenzene in which the polycarbonate is sparingly soluble or insoluble at room temperature, and which also has a boiling point higher than that of the organic solvent to be evaporated, until the organic solvent is evaporated off down to a residual content of less than 0.5% by weight, based on the total weight of the mixture. The resulting polycarbonate is then isolated either as a melt, by evaporating the benzene or alkylbenzene under pressure in known apparatus (Claim 1), or, in an alternative embodiment, by further concentrating it until a solid is formed, and removing the benzene or alkylbenzene by drying (Claims 5 and 6).

Preferably, the polycarbonate has a weight average molecular weight between 10 000 and 200 000, preferably between 20 000 and 80 000 (page 10, lines 15 to 18).

Polycarbonates based on bisphenol A may be bisphenol A homopolycarbonates or bisphenol A copolycarbonates which, in spite of the use of other difunctional components still have the poor solubility at room temperature in benzene or in alkylbenzenes. Further suitable difunctional components are diphenols other than bisphenol A, such as 2,2,-bis-(3,5-dibromo-4-hydroxyphenyl)-propane (page 10, lines 20 to 29).

According to Example 1, a 16.4% strength polycarbonate/methylene chloride solution prepared by the phase boundary process is introduced at the top of a distillation column, operated at normal pressure. The resulting polycarbonate/toluene mixture, in which 250 ppm methylene chloride are found, is pumped into a thin film evaporator operated under an increased pressure of 1.2 bar, toluene distilled off, and the concentrated mixture freed from toluene in a devolatilisation extruder. The resulting polycarbonate contains less than 2 ppm hydrolysable chlorine and has an empirical colour number of 0.05 (page 13, line 1 to page 14, line 4).

Furthermore, according to Example 3, a polycarbonate/toluene mixture obtained according to Example 1, which has been concentrated to 38% by weight in a thin film evaporator, is introduced into a kneader cooled with water in which, after a few seconds, solidification of the mixture starts, and

the mass crumbles. The product is then dried under normal pressure at 120°C for one hour and at 200°C for a further hour. Less than 10 ppm of toluene are found in the polycarbonate. The polycarbonate is melted in an extruder, drawn off as a bristle and granulated. The clear granules are injection-moulded to a test piece (page 19, lines 1 to 12).

2.4.2.2 Thus, E1 is concerned not so much with preparing a particular thermoplastic polycarbonate, as with isolating polycarbonates from their solutions, in particular in chlorine containing solvents. Furthermore, whilst E1 is concerned in general terms with obtaining high quality polycarbonates, having low colouration and a low residual chlorine content, the fact that all the products according to E1 have been prepared by the "phase boundary process", which involves the use of phosgene, implies that the resulting products will necessarily contain some chlorine (section III(b), penultimate sentence, above). This is in contrast to the products according to the patent in suit, which have been prepared by transesterification, which does not involve the use of phosgene. Apart from this, there is no information in the examples of E1 concerning the working parameters of the processing equipment, nor any indication of the precise starting materials used in the preparation of the illustrative polycarbonate.

Consequently, neither the chemical nature, nor, therefore, the content of terminal OH groups, nor even the molecular weight of the specific polycarbonate treated according to E1 is made available, let alone whether it has any degree of

crystallinity.

2.4.2.3 The argument of the Appellant at the oral proceedings, that the skilled person would understand the products according to E1 to be crystalline, was based on the acknowledgment of another prior art document in E1, according to which crystallisation of a polycarbonate from its solutions was promoted by addition, *inter alia*, of a non-solvent for the polycarbonate (page 4, lines 20 to 25). This reference does not, however, form part of the teaching of E1. On the contrary, it concerns a disclosure from which the teaching according to E1 is intended to be distinguished. Consequently, the acknowledgment of prior art in E1 has no relevance to the physical state of the polycarbonates exemplified in the teaching according to E1.

2.4.2.4 Closer examination, furthermore, shows that the examples of E1 refer, not so much to the addition of a non-solvent to the solution, but rather to its merely being contacted with vapours of a non-solvent. Consequently, the acknowledgment does not read on the examples of E1. Even if it were assumed to apply to the different procedure in the examples of E1, it refers only to promotion of crystallisation. Consequently, such a reference does not determine unambiguously whether the exemplified products are in fact crystalline or not.

2.4.2.5 The further argument of the Appellant, that the products exemplified in E1 would inevitably have crystalline character, was based on comparative experiments filed with the Notice of Opposition, and

an experimental report filed with the Statement of Grounds of Appeal, relating to alleged repetitions of the Examples of E1. The comparative experiments were, however, held in the decision under appeal to be unacceptable, because the information given in the examples of E1 was not such as to make available the chemical nature of the starting polycarbonate, a view with which the Board fully concurs (Reasons for the decision, point 6, second paragraph).

Similar considerations apply to the Experimental report accompanying the Statement of Grounds of Appeal, which merely contains supplementary information to the previously filed comparative experiments. Consequently, the experimental evidence filed in relation to the examples of E1 does not show that the latter disclose a crystalline polycarbonate.

2.4.2.6 In this connection, according to the preferred embodiment set out in Claim 1 of E1, the polycarbonate product is isolated as a melt and is therefore not crystalline. Even in Example 3 relating to an alternative embodiment, where a solid is formed in a water-cooled kneader, the Appellant did not refute the submission of the Respondent, that the rapidity of cooling ("a few seconds") would result in an amorphous polycarbonate being formed. On the contrary, the Appellant specifically admitted, during the oral proceedings, that a polycarbonate, in contrast to a conventional polyester, did not crystallise spontaneously.

2.4.2.7 Consequently, the examples of E1 do not make available, explicitly or implicitly, a crystalline

polycarbonate.

- 2.4.2.8 Neither is there any disclosure in E1 of products which are fully free of chlorine, nor any mention of the problem of providing a high heat resistance and resistance to boiling water.
- 2.4.2.9 In summary, whilst the polycarbonates referred to in E1 have certain features in common with those according to the patent in suit, the teachings of the two disclosures are at cross-purposes, in that the problem addressed is not closely oriented to that solved by the patent in suit.
- 2.4.2.10 Such a situation has been considered and adjudicated by another Board in decision T 0686/91 of 30 June 1994 (not published in OJ EPO).

In that decision, the Board observed that, in the determination of the closest state of the art, *ex post facto* considerations should be avoided.

Therefore, a document not mentioning a technical problem that is at least related to that derivable from the patent specification, did not normally qualify as a description of the closest state of the art on the basis of which the inventive step was to be assessed, regardless of the number of technical features it might have in common with the subject-matter of the patent concerned (Reasons for the Decision, point 4).

- 2.4.2.11 Thus, E1 is not an appropriate state of the art for the derivation of a technical problem related to that addressed by the patent in suit.

- 2.4.2.12 On the contrary, the finding in the decision under appeal, which has not been challenged, that E6 was the closest state of the art, implies that E6 is a more relevant, and therefore closer state of the art than E1 (section 2.2, above).
- 2.4.2.13 Consequently, the condition set out in question (b) for departing from the statement of problem set out in the patent in suit is also not fulfilled.
- 2.4.2.14 Thus, the application of the established case law to the choice of E1 as "closest state of the art" for the assessment of inventive step leads to the finding that the disclosure of E1 does not constitute an appropriate starting point for such an assessment.
- 2.4.2.15 Furthermore, the decision under appeal found that, starting from E6 as closest state of the art, the solution of the stated problem did not arise in an obvious way, so that the subject-matter of Claims 26 to 28 involved an inventive step. No relevant attack on the logic of this finding is discernible from the written and oral submissions of the Appellant. Consequently, the Board has no reason not to support the finding.
- 2.4.2.16 If the claimed subject-matter is not obvious in the light of E6, E6 being a closer state of the art than E1, however, it inescapably follows that the same subject-matter cannot be obvious, starting from E1.
- 2.5 Whilst the conclusion reached above is sufficient to ensure the failure of the appeal, it depends on the prohibition, following the logic of the established

case law in relation to the application of the "problem and solution approach", of using E1 as the "closest state of the art" for the derivation of a technical problem.

2.6 Since, however, one definition of the "closest state of the art" is "that state of the art which forms a springboard for the most effective attack on the claimed subject-matter", the chosen instrument of the Appellant for this purpose being E1, the question may possibly remain, from the point of view of the Appellant, of what the result would have been, following the problem and solution approach, if one had nevertheless taken E1 as a starting point in the assessment of inventive step.

2.6.1 It is clear that the formulation of any technical problem objectively arising from the disclosure of E1 would have to take account of the twin requirements of:

- (i) defining the problem underlying the alleged invention by comparison of the technical results achieved by the claimed invention with those achieved by the designated closest state of the art (T 248/85, OJ EPO 1986, 261; Reasons, point 11 of full text version); and
- (ii) not formulating the problem in terms which contain pointers to the solution (T 0229/85, OJ EPO 1987, 237).

2.6.2 Starting from such a disclosure as E1, in which the problem is not closely oriented to the claimed

subject-matter (section 2.4.2.9, above), an appropriate technical problem would need, in the Board's view, to reflect such lack of orientation, and consequently to be formulated along the lines of:

"The provision of a further polycarbonate with a different spectrum of utility."

2.6.3 Quite evidently, the solution of such a problem can practically never be obvious, because the absence, from the statement of problem, of an identifiable convergent aim or goal means that there is no basis for proposing any relevant measure or combination of measures of modification of this "closest state of the art" to achieve such an aim. In other words, any attempt by the skilled person to establish a chain of considerations leading in an obvious way to the claimed subject-matter gets stuck at the start. Nor would the skilled person be led to combine with E1 a prior art disclosure more directly relating to the relevant problem than that of E1, say E6, since the relevance of such a disclosure would not be apparent (T 0325/93 of 11 September 1997, not published in OJ EPO).

2.6.4 In summary, the technical problem arising from a "closest state of the art" disclosure which is irrelevant to the claimed subject-matter in the sense that it does not mention a problem that is at least related to that derivable from the patent specification has a form such that its solution can practically never be obvious, because any attempt by the skilled person to establish a chain of considerations leading in an obvious way to the

claimed subject-matter gets stuck at the start. It follows that the respective claimed subject-matter is non-obvious in the light of such art.

2.6.5 It follows from the above, that the subject-matter of Claims 26 to 28 involves an inventive step starting from E1 as closest state of the art (Article 56 EPC).

2.6.6 Consequently, the subject-matter of Claims 26 to 28 involves an inventive step within the meaning of Article 56 EPC.

3. *The patent in suit; process aspect (Claims 1 to 25)*

The patent in suit, in its process aspect, is concerned with a method for preparing a crystalline polycarbonate, the method differing from that of E6, the closest state of the art, only by the different amount of hydroquinone. This was, however, found in the decision under appeal to render the claimed subject-matter non-obvious over the state of the art (Reasons for the decision, points 5.2 to 5.4).

3.1 The argument of the Appellant, that the process according to Claim 1 was an analogy process to that of E6, was based on the concept that the product produced, as claimed in Claim 26, was known to the prior art. The withdrawal of the objection of lack of novelty by the Appellant at the oral proceedings meant, however, that the basic condition for a process to be regarded as an "analogy process", namely that it resulted in a known product (Statement of Grounds of Appeal, page 2), was thus explicitly removed. Not only this, but, for the reasons already

given, the relevant product has furthermore been found to involve an inventive step (section 2.6.6, above). Consequently, the argument on the basis of an "analogy process" is deprived of its premise. It need not, therefore, be considered further by the Board.

- 3.2 No further objections having been raised to the findings in the decision under appeal in relation to the subject-matter of Claims 1 to 25, with which the Board in any case fully concurs, the subject-matter of these claims, the novelty of which also has not been contested, is held to involve an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

1. The appeal is admissible.
2. The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

C. Gérardin