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**Datasheet for the decision
of 14 November 2006**

Case Number: T 0062/05 - 3.3.03

Application Number: 98938865.7

Publication Number: 1007593

IPC: C08L 69/00

Language of the proceedings: EN

Title of invention:
Polycarbonate resin composition

Patentee:
GE Plastics Japan K.K.

Opponent:
Koninklijke DSM N.V.
Teijin Chemicals, Ltd.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 72, 87(1), 88(1), 89
EPC R. 38(5), 71(2)

Keyword:
"Right of priority - assignment"
"Novelty - main request (no)"
"Inventive step - auxiliary request (no)"

Decisions cited:
G 0002/98, T 0551/89, T 0927/95, T 1056/01

Catchword:
-



Case Number: T 0062/05 - 3.3.03

DECISION
of the Technical Board of Appeal 3.3.03
of 14 November 2006

Appellant: GE Plastics Japan K.K.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 26 October and
posted 25 November 2004 revoking European
patent No. 1007593 pursuant to Article 102(1)
EPC.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
H. Preglau

Summary of Facts and Submissions

I. The grant of European patent No. 1 007 593 in the name of General Electric Company (later GE Plastics Japan K.K.) in respect of European patent application No. 98 938 865.7, filed on 31 August 1998 and claiming priority of the Japanese patent application JP 24986597 filed on 29 August 1997 was announced on 3 April 2002 (Bulletin 2002/14) on the basis of 10 claims.

Independent Claims 1 and 10 read as follows:

"1. A polycarbonate resin composition, comprising:
(A) 1 to 99 parts by weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and
(B) 1 to 99 parts by weight of
(B-1) a copolymer having as its component parts (a) an aromatic vinyl monomer component, (b) a cyanide vinyl monomer component, and (c) a rubber-like polymer, or
(B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (5) a cyanide vinyl monomer component, the aforementioned (B-2) being copolymer having a weight average molecular weight of 30,000 to 200,000,
wherein component (B) contains sodium and potassium in an amount of 1 ppm or less, and
(C) 1 to 40 parts by weight with respect to 100 parts by weight of components (A) and (B) of a phosphoric ester compound having an acid value of 1 or less.

10. A polycarbonate resin composition obtainable by melt polymerization comprising:

- (A) 1 to 99 parts weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and
- (B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (b) a cyanide vinyl monomer component, the aforementioned (B-2) being a copolymer having a weight average molecular weight of 30,000 to 200,000, wherein component (B) contains sodium and potassium in an amount of 1 ppm or less, and
- (C) a phosphoric ester compound having an acid value of 1 or less in an amount of from 1 to 40 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2) and
- (E) an epoxy stabilizer in an amount of from 0.01 to 10 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2)."

Claims 2 to 9 were dependent claims, dependent Claim 8 reading as follows:

"The polycarbonate resin composition of Claim 1 wherein the polycarbonate resin composition contains 1 ppm or less of an alkali metal"

II. Two notices of Opposition were filed against the patent, as follows:

- (i) by DSM N.V (later Koninklijke DSM N.V) (Opponent I), on 20 December 2002, and

(ii) by Teijin Chemicals Ltd ((Opponent II), on
3 January 2003.

The Opponents requested revocation of the patent on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC), and on the ground of insufficiency of disclosure (Article 100(b) EPC).

The following documents have been *inter alia* considered during the opposition proceedings:

- D1: EP-A-0 755 977;
- D4: J. Bussink et al, "Technische Polymer-Blends"; Kunststoff Handbuch, Vol.3/2, Carl Hanser Verlag München, 1993, page 162;
- D5: C. Pryde et al, "The Hydrolytic Stability of Some Commercially Available Polycarbonates"; Polymer Engineering and Science, Vol. 22, No. 6, April 1982, pages 370-375;
- D7: EP-A-0 520 805;
- D8: WO-A-91 18 052;
- D9: EP-A-0 641 827;
- D16: EP-A-0 690 063;
- D17: JP-A-09 157485;
- D18: Partial English translation of D17;
- D18a: Further partial English translation of D17;
- D24: JP-A-06 80 885;
- D25: Partial English translation of D24;
- D26: JP-A-10 168227;
- D27: Partial English translation of D26; and
- D31: Affidavit of Dr Srinivas Siripurapu.

III. By a decision announced orally on 26 October 2004 and issued in writing on 25 November 2004, the Opposition Division revoked the patent.

The decision of the Opposition Division was based on Claims 1 to 11 as submitted with letter dated 2 August 2004 as main request, and on Claims 1 to 10 as submitted during the oral proceedings of 26 October 2004 as auxiliary request.

The Opposition Division revoked the patent on the grounds that the main request did not meet the requirements of Article 84 EPC and that the subject-matter of the auxiliary request was obvious starting from document D1 as the closest state of the art. In its decision, the Opposition Division held that the main request could not claim the priority of the Japanese Patent application JP 24986597 of 29 August 1997. It also held that the auxiliary request met the requirements of Articles 83 and 54 EPC.

Concerning the assessment of inventive step of the subject-matter of the auxiliary request, it was held that starting from D1, the technical problem was to be seen in the provision of polycarbonate/ABS/phosphoric ester compositions having improved moisture resistance at high temperature.

According to the decision, document D25 taught that bisphenol-A based phosphoric esters should preferably be used instead of resorcinol based phosphoric ester in order to improve the moisture resistance of polycarbonate resins, and documents D8 and D18 taught to maintain the level of sodium and potassium as low as possible to improve the moisture resistance of polycarbonate at high temperature. Furthermore, according to the decision, it was known that the hydrolytic degradation of polycarbonate was acid

catalyzed (cf. document D5), thus the skilled person aiming to improve the moisture resistance of the polycarbonate would select phosphoric esters having a low acid value as disclosed in documents D16, D26 and D27.

The decision further stated that there was no evidence of a synergetic effect of using a copolymer having a low alkali content and a phosphoric acid ester derived from polynuclear phenol having a low acid value. Consequently, the Opposition Division came to the conclusion that it would have been obvious to combine the different teachings of several documents which all aimed at solving the same problem in order to provide an effect which would be better than when only one of the measures taught in these documents would be used.

IV. A Notice of Appeal was filed on 11 January 2005 by the Appellant (Patent Proprietor) with simultaneous payment of the prescribed fee.

With the Statement of Grounds of Appeal filed on 24 March 2005, the Appellant submitted a set of Claims 1 to 10, which were said to correspond essentially to Claims 1 to 10 of the auxiliary request submitted at the oral proceedings before the Opposition Division, as new main request and the following documents:

D32: Affidavit of Dr Srinivas Siripurapu dated 22 March 2005; and

Assignment between General Electric Company and GE Plastics Japan K.K concerning the transfer of the European Patent 1 007 593 from General Electric to GE Plastics Japan K.K.

Independent Claims 1 and 10 of the main request read as follows:

"1. A polycarbonate resin composition, comprising:

(A) 1 to 99 parts by weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and

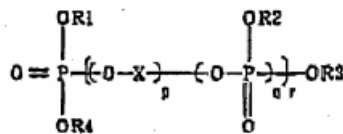
(B) 1 to 99 parts by weight of

(B-1) a copolymer having as its component parts (a) an aromatic vinyl monomer component, (b) a cyanide vinyl monomer component, and (c) a rubber-like polymer, or

(B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (b) a cyanide vinyl monomer component, the aforementioned (B-2) being a copolymer having a weight average molecular weight of 30,000 to 200,000,

wherein component (B) contains sodium and potassium in an amount of 1 ppm or less, and

(C) 1 to 40 parts by weight with respect to 100 parts by weight of components (A) and (B), of a phosphoric ester compound having an acid value of 1 or less, chosen from bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, bisphenol A tetraxylyldiphosphate, bisphenol A bisphosphate with the formula



in which R1-R4 are alkoxy groups or (substituted) phenoxy groups.

10. A polycarbonate resin composition obtainable by melt polymerization comprising:

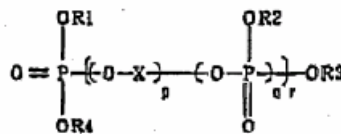
(A) 1 to 99 parts weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and

(B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (b) a cyanide vinyl monomer component, the aforementioned (B-2) being a copolymer having a weight average molecular weight of 30,000 to 200,000,

wherein component (B) contains sodium and potassium in an amount of 1 ppm or less, and

(C) a phosphoric ester compound having an acid value of 1 or less in an amount of from 1 to 40 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2)

chosen from bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, bisphenol A tetraxylyldiphosphate, bisphenol A bisphosphate with the formula



in which R1-R4 are alkoxy groups or (substituted) phenoxy groups and

(E) an epoxy stabilizer in an amount of from 0.01 to 10 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2)."

Dependent Claims 2 to 9 corresponded to granted Claims 2 to 9.

The arguments presented by the Appellant in its Statement of Grounds of Appeal may be summarized as follows:

(i) Concerning inventive step:

(i.1) Starting from D1 the objective problem to be solved was to improve the moisture resistance of compositions described in D1.

(i.2) According to the patent in suit, this improvement had been achieved by a combination of two essential features:

- the sodium and potassium content of component B which should be 1 ppm or less and
- the acid value of the phosphoric ester compound C which should be 1 or less.

(i.3) D1 did not disclose either of the above features let alone the combination of both.

(i.4) The experiments described in D32 showed that the combination of the above mentioned two features gave a clear synergetic effect.

(i.4.1) Compositions 1, 2 and 3 were comparative experiments; composition 4 was the sole composition meeting the requirements of claim 1 of the contested patent. The sole differences between all four compositions dealt with the sodium and potassium content of component B and the acid level of component C.

(i.4.2) The molecular weight of the polycarbonate of the compositions 1, 2 and 3 dropped from 55 000 to 34 500, from 55 000 to 33 500, and from 55 000 to 41 000 respectively after 24 hours of exposure at 80°C and 80% humidity. In contrast the molecular weight of the polycarbonate of composition 4 decreased slightly from 55 000 to 53 000.

(i.4.3) Furthermore, after an exposure of 400 hours the Notched Izod Impact value of compositions 1, and 3 had dropped to about 0 whereas composition 4 still retained a strength of 162 J/m. The five test bars of compositions 1, 2 and 3 broke brittle after an exposure of 100 hours whereas all five test bars of example 4 retained ductility.

(i.4.4) These experimental results confirmed the synergism between these two claimed features of the compositions according to Claim 1.

(i.5) None of the prior art documents suggested the use of compositions having these two features for improving the resistance to moisture.

(i.6) The strong synergism between these two features made the combined use of the two features inventive.

(ii) Concerning the priority right:

(ii.1) The Opposition had not acknowledged the right to priority for two reasons:

(a) There was a lack of identity of the proprietor of the priority right based on JP 2498697 and the proprietor of the contested patent;

and

(b) the contested patent did not claim the same invention as described in the priority document.

(ii.2) The first objection had been overcome since General Electric Company had decided to assign the contested patent to the proprietor of the priority document i.e. to GE Plastics Japan K.K., which was the English language name for Nihon GE Plastics K.K.

(ii.3) Article 88(2) EPC allowed multiple priorities for any one claim. This meant that Article 88(2) EPC made it possible to claim in any one claim priority for a part of the claimed concentration range. Hence, priority could be recognized for the part disclosed in the priority document.

(ii.4) It would thus become necessary to determine in the present case for what part of the claimed range of concentration priority can be recognized, i.e. to determine the range of overlap between the priority document and the present main claim of the opposed patent.

(ii.5) While the definitions of components A, B and C of current claim 1 and of the content of the priority document might not be identical either, priority was claimed for the overlapping part of the definitions only.

V. The arguments presented by Respondent I (Opponent I) in its letter dated 19 July 2005 may be summarized as follows:

(i) The Appellant had tried to repair the defect in the priority claim by transferring the application to the holder of the priority.

(ii) The right to priority should however be invoked within a time limit of twelve months.

(iii) The omission to invoke the priority correctly could not be repaired by retroactive transfer of the application.

VI. The arguments presented by Respondent II (Opponent II) in its letter dated 12 August 2005 may be summarized as follows:

(i) Concerning the clarity of the claims of the main request:

(i.1) Claims 1 and 10 were unclear because moiety X and numbers p, q and r in the general structural formula recited in these claims for the bisphenol bisphosphate component were not defined.

(i.2) Furthermore, the expression "(substituted) phenoxy groups" also gave rise to a lack of clarity because bracketed expressions that did not include reference signs and that did not have a generally accepted meaning were generally unclear.

(ii) Concerning priority:

(ii.1) The Appellant had tried to remedy the situation by transferring the patent to the legal person who had filed the application from which the priority had been claimed by an assignment executed nearly seven years after the filing date of the application for the opposed patent.

(ii.2) Such a retroactive transfer could not render the priority claim valid if the right to claim the priority did not lie, at the time of filing, with the applicant who actually filed the application for the opposed patent.

(ii.3) Multiple (or partial) priorities could be claimed for a single claim only if the subject-matter of that claim consisted of two (or more) independent alternatives which could equally be claimed in two (or more) separate claims.

(ii.4) In the present case, the subject-matter of granted or amended Claim 1 could not be "dissected" in two separate claims, one of which would correspond exactly to what is disclosed in the priority application and thus enjoying the claimed priority) and the other defining the "excess" subject-matter not disclosed in the priority application.

(ii.5) In the absence of this possibility there were no separate alternatives, but different inventions.

(ii.6) The Appellant had submitted that a priority claim was valid as long as the subject-matter of the

patent claim in question was generically encompassed by the disclosure of the priority application.

(ii.7) This was an untenable proposition because the expression "directly and unambiguously derivable from" as used in the headnote of decision G 2/98 (OJ EPO 2001, 413) did clearly not mean "falling within the ambit of".

(ii.8) Furthermore, the Appellant had failed to submit a translation of the priority document as required under Article 88(1) EPC and Rule 38(5) EPC.

(iii) Concerning inventive step:

(iii.1) The alleged synergistic effect on which the Appellant now wished to rely could not be taken into consideration in the assessment of inventive step because this would amount to an inadmissible restatement of the technical problem underlying the claimed invention for which there was no basis in the application as filed.

(iii.2) Furthermore, as also acknowledged in the decision under appeal, there was no evidence for a synergistic effect.

(iii.3) In order to counter this finding the Appellant had submitted further experimental evidence (D32) to show that the combined use of a low concentration of sodium and potassium in component B and a low acid value in component C resulted in an unexpected increase in moisture resistance which was greater than the effect that would have been expected on the basis of each of these measures taken alone.

(iii.4) However, a comparison between compositions 1 and 2 of reports D31 and D32 showed that the Appellant's data were inherently contradictory and, therefore, incredible.

(iii.5) The alleged technical synergistic effect of using an ABS resin containing low amounts of sodium and potassium and a phosphoric ester compound having a low acid value was inherently disclosed in prior art document D9 (EP 0 641 827 A1).

(iii.6) The only relevant difference between the compositions of Example 1 of D9 and Composition 4 of D32 was that the composition according D9 contained a phosphoric ester compound (triphenyl phosphate) not falling within the scope of the definition of component C in Claim 1.

(iii.7) The Appellant should hence demonstrate an advantageous technical effect of the claimed invention over the disclosure of D9.

(iii.8) In that respect, however, the data in the patent specification showed that the effects observed with a resorcinol-type flame retardant (Example 4) were essentially identical to those observed with a bisphenol-A type flame retardant (Example 5).

(iii.9) The technical problem was not solved across the whole scope of the claims.

(iii.10) This was because Claim 1 did not place a limitation on the sodium and potassium content or on the acid value of the resin composition as a whole.

VII. In a communication issued on 12 July 2006 accompanying a summons to oral proceedings, the attention of the Parties was drawn to issues concerning the validity of the priority claim, the clarity of the claims 1 and 10 of the set of claims 1 to 10 submitted with the Statement of Grounds of Appeal, and the interpretation of the claims in view of the limitation of sodium and potassium amount in component B of the claimed composition.

VIII. With its letter dated 1 September 2006, the Appellant submitted a new main request and a first auxiliary request.
Independent Claims 1 and 10 of the main request read as follows:

"1. A polycarbonate resin composition, comprising:
(A) 1 to 99 parts by weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and
(B) 1 to 99 parts by weight of
(B-1) a copolymer having as its component parts (a) an aromatic vinyl monomer component, (b) a cyanide vinyl monomer component, and (c) a rubber-like polymer, or
(B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (b) a cyanide vinyl monomer component, the aforementioned (B-2) being copolymer having a weight average molecular weight of 30,000 to 200,000,
wherein component (B) contains sodium and potassium in an amount of 1 ppm or less, and

(C) 1 to 40 parts by weight with respect to 100 parts by weight of components (A) and (B), of a phosphoric ester compound having an acid value of 1 or less, selected from bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, and bisphenol A tetraxylyldiphosphate.

10. A polycarbonate resin composition obtainable by melt polymerization comprising:

(A) 1 to 99 parts weight of polycarbonate resin having a viscosity average molecular weight of 21,000 to 100,000, and

(B-2) a copolymer having as its component parts (a) an aromatic vinyl monomer component and (b) a cyanide vinyl monomer component, the aforementioned (B-2) being a copolymer having a weight average molecular weight of 30,000 to 200,000,

wherein component (B) contains sodium or potassium in an amount of 1 ppm or less, and

(C) a phosphoric ester compound having an acid value of 1 or less, selected from bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, and bisphenol A tetraxylyldiphosphate, in an amount of from 1 to 40 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2) and

(E) an epoxy stabilizer in an amount of from 0.01 to 10 parts by weight with respect to a total of 100 parts by weight of components (A) and (B-2)."

Dependent Claims 2 to 9 corresponded to granted Claims 2 to 9.

Independent Claims 1 and 9 of the first auxiliary request differed from Claim 1 and 10 of the main request, in that it was indicated that the polycarbonate resin composition contained 1 ppm or less of an alkali metal.

Dependent Claims 2 to 7, and 8 of the first auxiliary corresponded to granted Claims 2 to 7, and 9.

The Appellant also filed the following documents:

D33: Declaration of Mr Mark Wall of GE Plastics Japan Ltd., dated 9/5/05;

D33a: E-mail of Mr Tyusho Yamamoto of GE Plastics Japan Ltd., dated 15 July 1998 to Mr Frank Smith of General Electric Company;

D33b: E-mail of Mr Frank Smith of General Electric Company dated 16 July 1998 to Mr Tyusho Yamamoto of GE Plastics Japan Ltd;

D33c: Assignment document dated 15 October 1998 signed by Mr Yuzuru Sawano and by Mr Tyusho Yamamoto; and

D33d: Notarial certificate dated 19 January 1999.

The Appellant also argued essentially as follows:

(i) Concerning the priority:

(i.1) Documents D33 to D33d clearly established that GE Plastics Japan Ltd not only assigned the invention to General Electric Company but also the associated right to priority.

(i.2) Thus, as submitted in the Statement of Grounds Appeal, it was believed that the present owner of the contested patent was entitled to a partial priority right.

(ii) Concerning inventive step:

(ii.1) The arguments of Respondent II seemed to be the following:

(a) The Appellant could not rely on the reported synergistic effect, since this would represent an inadmissible restatement of the objective technical problem;

(b) There was no synergistic effect;

(c) The effect was not new; and

(d) The problem was not solved across the whole scope of the claims.

(ii.1.1) Concerning point (a):

(ii.1.1.1) The objective problem was to improve the moisture resistance.

(ii.1.1.2) In case of a solution consisting of the combination of two known steps it was well-established practice to consider synergistic effects as a positive indication of the presence of inventive step.

(ii.1.1.3) Thus, the objective problem had not been reformulated.

(ii.1.2) Concerning point (b):

(ii.1.2.1)Both comparisons between composition 4 of D31 with the compositions 1 to 3 of D31 and between the composition 4 of D31 with the compositions 1 to 3 of D32 showed a huge difference in terms of molecular weight reduction which was far bigger than the variation in results caused by the test methods.

(ii.1.2.2) Thus, D31 and D32 demonstrated a strong and unexpected synergistic effect.

(ii.1.3) Concerning point (c):

There was no reference or suggestion in D9 that the claimed combination would improve the moisture resistance.

(ii.1.4) Concerning point (d):

(ii.1.4.1) Respondent II had not shown that by blending commonly used polycarbonates the problem was not solved. Commonly used polycarbonates had a low sodium and potassium content.

(ii.1.4.2) In the first auxiliary request the claimed compositions had been limited to those containing 1 ppm or less of alkali metal.

IX. In its letter dated 5 October 2006, Respondent II argued essentially as follows:

(i) Concerning documents D31 and D32:

(i.1) The Appellant had given no explanation why the amount of error in the test should exceed the variation of the molecular weight in compositions 1 and 2 of documents D31 and D32.

(i.2) It would be impossible to determine the extent of the alleged synergistic effect if the amount of error had been removed.

(ii) Concerning inventive step:

(ii.1) The alleged synergistic effect was inherently disclosed in Example 1 of D9.

(ii.2) This Example represented the closest state of the art.

(ii.3) The Appellant's argument was however based on the contention that composition 1 of D32 represented the closest state of the art.

X. With its letter dated 27 October 2006, Respondent I informed the Board that it would not attend the oral proceedings scheduled for 14 November 2006.

It also argued essentially as follows:

(i) Concerning the priority:

(i.1) The assignment document (D33c) had been signed on 15 October 1998, i.e. after the twelve month period starting from 29 August 1997.

(i.2) The E-mails (D33a-D33b) were no evidence at all that all rights associated with the Japanese patent application No. 24986697, including the right of priority, were offered to GE before the end of twelve month period starting from 29 August 1997.

(ii) Concerning inventive step:

(ii.1) There was no evidence that the particular upper limit of the sodium and potassium content of 1 ppm per se or of the acid value of 1 per se were essential for the proposed solution.

(ii.2) Thus the threshold of 1 ppm and acid value of 1 should be disregarded when assessing inventive step.

(ii.3) The alleged synergistic effect on which the Appellant had relied Proprietor could not be taken into consideration for assessment of inventive step for at least the following reasons:

(a) This alleged synergistic effect could not be directly and unambiguously derived from the application as filed.

(b) There was no synergistic effect at all, and

(c) Composition 1 of D32 did not represent the closest prior art.

(ii.4) It was also known that the hydrolysis of polycarbonate was accelerated by the presence of acids and alkali metal ions (see D5, D8 and D18).

(ii.5) Since both negative influences were well recognized and known, it would have been obvious to avoid or omit these two negative factors (being acids and alkali metal ions) in case a high hydrolytic stability was required.

(ii.6) The effect of omitting or avoiding two negative factors could not be called a synergistic effect.

(ii.7) Polycarbonate compositions containing bulk ABS having low sodium and potassium content, and phosphoric ester compounds having a low acid value were known for making moisture resistant polycarbonate compositions.

(ii.8) Present claim 1 only differed from these known compositions in that bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, or bisphenol A tetraxylyldiphosphate were used as phosphoric ester compound.

(ii.9) D32 did not contain a comparison between the known compositions and a composition containing the specific phosphoric ester compound.

(ii.10) It was also known from the art that the use of bisphenol A based phosphoric acid esters was preferred as compared to resorcinol- or hydroquinone based phosphates (see D1, page 3, lines 10-13).

(ii.11) D25 also showed that bisphenol A based phosphoric acid esters have per se higher resistance to hydrolysis than resorcinol based phosphates.

XI. Oral proceedings were held on 14 November 2006, in the absence of Respondent I.

At the oral proceedings the discussion focussed on (i) the validity of the priority and (ii) on the assessment of novelty and inventive step of the subject-matter of the main and the first auxiliary requests.

Concerning point (i), while the Parties essentially relied on the arguments presented in the written phase of the appeal proceedings, they made additional submissions which may be summarized as follows:

(i.a) By the Appellant:

(i.a.1) It was evident from the documents D33, D33a, D33b that it had been always the intention of GE Plastics Japan to transfer these rights to General Electric.

(i.a.2) Document D33c should be considered as a confirmation in that respect.

(i.a.3) It would have been illogical for GE Plastics Japan to assign the application to General Electric Company without assigning the corresponding priority rights.

(i.a.4) As indicated in D33, GE Plastics Japan Ltd was a joint venture company in which General Electric Company held a major interest. It was the current policy that General Electric Company be responsible for the filing of foreign application on the basis of application made in Japan by GE Plastics Japan Ltd.

(i.b) By the Respondent II:

(i.b.1) Document D33c had only be signed by the inventor and not by a person empowered by GE Plastics Japan Ltd.

(i.b.2) Furthermore D33c only referred to the rights attached to an US application and not to the Japanese patent application JP24986597 of 29 August 1997.

(i.b.3) It would be also questionable as to whether E-mails could be considered as constituting written communications.

(i.b.4) Consequently, there was no evidence of the succession in title between GE Plastics Japan Ltd and General Electric Company concerning the priority rights attached to the JP24986597.

(ii) The Board, after deliberation, having informed the Parties, that the priority claim could not be considered as valid, drew the attention of the Parties to document D26 (published on 23 June 1998) which hence belonged to the state of art according to Article 54(1)(2) EPC, and its partial translation D27, and to the relevance of these documents for the novelty and inventive step of the subject-matter of the main and the first auxiliary requests.

The arguments presented by the Parties in that respect may be summarized as follows:

(ii.a) By the Appellant:

(ii.a.1) Even if it would be considered that the phosphate ester manufactured in Example 1 of D26/D27 was a tetraphenyl bisphenol A diphosphate having an acidity of less than 1, Example 4 of D26/D27 would not be novelty destroying for the subject-matter of Claim 1 of the main request, since it failed to disclose the sodium and potassium amounts of the ABS component of the polycarbonate composition disclosed in that example.

(ii.a.2) It would be illogical to set a limitation on the sodium and potassium content of the ABS component and at the same time to use a polycarbonate resin having a high amount of alkaline impurities.

(ii.a.2) The amount of sodium and potassium in the ABS component was hence an essential characterizing feature of the claimed composition. Furthermore, these impurities would remain locked into the ABS phase of the claimed composition, so that the specific ABS resin could be identified in the final composition.

(ii.a.3) It was agreed that D26/D27 would constitute the closest state of the art since it was concerned with the hydrolysis resistance of thermoplastics compositions comprising phosphate flame retardants.

(ii.a.4) The only distinguishing feature between the claimed composition and Example 4 of D26/D27 was the amount of alkali metal (i.e. sodium and potassium).

(ii.a.5) In view of the comparison between compositions 1 and 3 of document D32, it could not have been

expected as shown by the comparison between compositions 2 and 4 of D32 that such an improvement of the hydrolysis resistance might be achieved by using a phosphate ester of low acidity in combination with an ABS resin having a low sodium and potassium content.

(ii.a,6) There was no indication in the further documents cited that such an effect could be achieved.

(ii.b) By the Respondent II:

(ii.b.1) The amount of sodium and potassium of the ABS component could not be considered as a distinguishing feature.

(ii.b.2) The indication of the amount of sodium and potassium in the ABS component used did not limit the amount of these components in the whole composition. This was also apparent from granted Claim 8 which defined the total amount of alkali metal in the composition.

(ii.b.3) Starting from D26/D27 as closest state of the art, it could not be argued that there was a synergistic effect, since the claimed composition would only differ from that disclosed in D26/D27 by the amount of alkali metal therein.

(ii.b.4) It was however known from document D18, D8, D7 and D4 that the amount of such impurities should be reduced in order to improve the hydrolysis resistance of polycarbonate compositions.

XIII. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the set of claims filed with letter dated 1 September 2006 (main request), or in the alternative on the basis of the set of claims filed as auxiliary request with letter dated 1 September 2006.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. As mentioned above in paragraph X, the Respondent I indicated that it would not be represented at the oral proceedings before the Board. In accordance with Rule 71(2) EPC, the proceedings were continued without it.
3. *Priority*
 - 3.1 Pursuant to Article 87(1) EPC a person who has duly filed in or for any State party to the Paris Convention for the Protection of Industrial Property, an application for a patent or for the registration of a utility model or for a utility certificate or for an inventor's certificate, or his successors in title, shall enjoy, for the purpose of filing a European patent application in respect of the same invention, a right of priority during a period of twelve months from the date of filing of the first application.

- 3.2 From the wording of this provision it is clear that the right to claim priority belongs to the person who has duly filed in or for any state party to the Paris Convention for the Protection of Industrial Property, an application for a patent, or to his successors in title.
- 3.3 In the present case, the European patent application No. 98 938 865 (filed on 31 August 1998) resulting in the European patent in suit No. 1 007 593 and the Japanese patent application No. 24986597 (filed on 29 August 1997) from which priority is claimed were filed by different persons as can be seen from the European patent application (i.e. General Electric Company) and the priority document (i.e. Nihon GE Plastics K.K).
- 3.4 Although the European patent 1 007 593 in respect of the European patent application No. 98 938 865.7, has been transferred on 15 March 2005 to GE Plastics Japan K.K which is the English language name for Nihon GE Plastics K.K), this is not relevant to the question whether General Electric Company was entitled to claim priority from the Japanese patent application No. 24986597 when it filed the European Patent application No. 98 938 865 on 31 August 1998.
- 3.5 Consequently, General Electric Company can only be considered as the owner of the right of claiming priority from the Japanese patent application No. 24986597 for the European patent application No. 98 938 865.7, provided it is established that the succession in title from Nihon G.E. Plastics K.K to

- General Electric Company occurred before the end of the twelve month period starting from 29 August 1997.
- 3.6 Priority rights are assignable independently of the corresponding patent application, and furthermore their assignment may be restricted to specific countries.
- 3.7 In that respect, the Board can only state that the European Patent Convention does not contain any regulations concerning the formal requirements that an assignment of priority rights for the filing of an European patent application should fulfil in order to be considered as valid for the sake of Article 87(1) EPC.
- 3.8 However, having regard to the crucial effect a valid priority date has on patentability (i.e. limitation of the state of the art to be taken into account for the assessment of novelty and inventive step (cf. Article 89 EPC)), and to the fact that, in the present case, the validity of the priority claim depends on the validity of the transfer from Nihon G.E. Plastics K.K to General Electric Company of the ownership of the right of claiming priority from the Japanese patent application No. 24986597 for the European patent application No. 98 938 865.7, such transfer of priority rights must, in the Board's view, be proven in a formal way (cf. by analogy T 1056/01 of 4 June 2003, not published in OJ EPO, Reasons point 2.9).
- 3.9 In that context, it hence appears reasonable to the Board to apply an equally high standard of proof as the one required for the assignment of an European Patent application by Article 72 EPC, i.e. that the assignment

- of priority rights has to be in writing and has to be signed by or on behalf of the Parties to the transaction.
- 3.10 In this connection, the Board observes however that the assignment presented in document D33c and certified by document D33d has been signed only by the inventor (Mr Yuzuru Sawano) and not by all the Parties to the transaction (i.e. General Electric Company and Nihon G.E. Plastics K. K) and that it merely refers to "all rights of priority resulting from the filing of **said United States application**" (emphasis by the Board) and not from the Japanese patent application JP 24986597.
- 3.11 Although at least for these reasons document D33c cannot be considered as a valid assignment of the priority rights JP 24986597 filed on 29 August 1997 for the filing of an European patent application, it would in any case at best have shown that the alleged assignment had been made on 15 October 1998, i.e. well **after** the end of the twelve month period starting on 29 August 1997.
- 3.12 Nevertheless, the Board notes that the Appellant has submitted that the assignment of the priority rights associated with the Japanese patent application to General Electric Company by GE Plastics Japan K.K before the end of the twelve month period starting from 29 August 1997 should be considered as having implicitly and tacitly taken place in view of documents D33, D33a and D33b (cf. Section XI (i.a.1), above).
- 3.13 In that respect, although D33, which is a declaration of Mr Mark Wall (i.e. the Representative Director &

President of GE Plastics Japan Ltd (i.e. GE Plastics Japan K.K) dated 9/5/05, states that "by the above actions (i.e. the E-mails D33a and D33b) we offered all rights associated with this application to GE for all countries of the world except Japan. This included of course the right to priority", the Board observes that document D33a does not refer at all to the filing of an European patent application on the basis of this Japanese patent application, and that document D33b although referring, in general, to foreign patent applications fails to specify explicitly the countries for which General Electric should indeed file a patent application on that basis (cf. D33b, second paragraph).

- 3.14 The further argument of the Appellant, that it would have been illogical for GE Plastics Japan K.K to assign the application to General Electric Company without assigning the corresponding priority rights is also not convincing, since priority rights may be assigned independently of the corresponding patent application, and furthermore may be restricted to specific countries.
- 3.15 Nor could it be considered that it was a general policy between GE Plastics Japan K.K and General Electric Company, that General Electric Company would be in charge of the filing of European patent applications based on Japanese prior patent application made by GE Plastics Japan K.K, since document D7, which is a European patent application in the name of this company clearly shows that GE Plastics Japan K.K may also directly apply for a patent application in Europe on the basis of its own Japanese patent application.

3.16 Thus, even if an intention to transfer priority rights might have been discerned from documents D33a and D33b, the Board can only state that this intention has not been finalized in a form which would indubitably establish that the transfer of the priority rights for the filing of an European patent application on the basis of the Japanese patent application JP 24986597 has taken place before the end of the twelve month period starting on 29 August 1997.

3.17 Since for this reason alone the priority from the Japanese patent application JP 24986597 filed on 29 August 1997 cannot validly be claimed for the European patent application No. 98 938 865.7, there is no need for the Board to consider the further objections raised by the Respondents for challenging the validity of the priority claim (i.e. the filing of a corrected translation of the Japanese application JP 24986597 after expiry of the delay set out by Rule 38(5) EPC, or the question as to whether the patent in suit and the alleged priority document relate to the same invention).

3.18 It thus follows from the above considerations that the filing date of the European patent application 98 938 865.7 for the purposes of Article 54(2) EPC is 31 August 1998.

Main request

4. *Wording of the claims*

4.1 Claims 1 to 10 of the main request differ from Claims 1 to 10 as granted in that it has been indicated in

independent Claims 1 and 10 that the phosphoric ester compound (C) is selected from bisphenol A tetraphenyldiphosphate, bisphenol A tetracresyldiphosphate, and bisphenol A tetraxylyldiphosphate.

4.2 No objection under Article 84, 123(2) or 123(3) EPC against the claims of the main request has been raised by the Respondents.

4.3 The Board is also satisfied that the requirements of these articles are met by all the claims.

5. *Novelty*

5.1 Document D26 has been published on 23 June 1998. It hence belongs to the prior art according to Article 54(2) EPC (see also paragraph 3.18 above).

5.2 As evidenced by the partial translation (D27) of document D26, it relates to flame resistant thermoplastic compositions having hydrothermal resistance and comprising a low acidity phosphate based flame retardant (cf. paragraphs [0001] and [0021]).

5.3 In its Example 1, D26 discloses the preparation of a phosphate ester by reaction of 2 moles of diphenyl phosphoryl chloride with 1 mole of bisphenol A. Although D26 does not explicitly mentions the formula of the phosphate ester obtained, it is evident, in the Board's view, that tetraphenyl bisphenol diphosphate (i.e. a phosphate ester as claimed in Claim 1 of the main request) results from this reaction. This has not been contested by the Appellant.

- 5.4 In paragraph [0036] D26 discloses the acidity of the phosphate obtained in this Example 1 as being 0.1.
- 5.5 In its Example 4 (paragraph [0049]) D26 discloses a thermoplastic composition comprising 65 parts by weight of a polycarbonate resin said to have an intrinsic viscosity of 0.5 l/g in methylene chloride at 25°C, 25 parts of an ABS resin and 10 parts by weight of the phosphate prepared in Example 1. This composition is further used for injection molding test pieces.
- 5.6 In this connection, the Board notes that the Appellant has submitted that D26 discloses all the features of the composition of Claim 1 except the amount of potassium and sodium in the component B of the claimed composition and that this feature would constitute the distinguishing feature between the composition according to Claim 1 and D26.
- 5.7 In that respect, the Board notes however that the wording of Claim 1 of the main request, although indicating that the component B (e.g. an ABS component) should have a potassium and sodium content of 1 ppm or less, does not restrict at all the amount of alkali metals, let alone of sodium or potassium, in the claimed composition as a whole. Such a limitation is only the subject-matter of granted dependent Claim 8.
- 5.8 This implies, in the Board's view, that the amount of sodium and potassium of the component B cannot be considered as a characterizing feature of the claimed composition according to Claim 1.

- 5.9 This conclusion cannot be altered by the argument of the Appellant, that the potassium and sodium of component B would remain locked in the phase of component B dispersed in the polycarbonate phase of the resin composition, that hence the presence of such amounts of potassium and sodium in that component would be a kind of fingerprint of the specific ABS component in the claimed composition, and thus would allow a distinction between the composition according to Claim 1 and that according to Example 4 of D26.
- 5.10 Independently of the fact that there is no evidence that the sodium and potassium amounts of component B would remain locked in the phase of this component when mixed within the polycarbonate resin, this is because this argument would be irreconcilable with the further arguments of the Appellant that the reduction of sodium and potassium in component B influence the hydrolysis resistance of the polycarbonate resin composition, if these impurities were effectively locked in the dispersed phase of component B.
- 5.11 Consequently, the Board comes to the conclusion that there is no characterizing feature of the composition according to Claim 1 which distinguishes it from the disclosure of document D26, and hence that document D26 must be regarded as novelty destroying for the subject-matter of Claim 1 of the main request.
- 5.12 It thus follows that the main request must be refused.

First auxiliary request

6. *Wording of the claims*

6.1 Independent Claims 1 and 9 of the first auxiliary request differ from Claims 1 and 9 of the main request, in that it has been indicated in that the total amount of alkali metal in the claimed composition is 1 ppm or less. Dependent Claims 2 to 7, and 8 are the same as Claims 2 to 7, and 9 of the main request.

6.2 No objection under Article 84, 123(2) or 123(3) EPC against the claims of the main request has been raised by the Respondents.

6.3 The Board is also satisfied that the requirements of these articles are met by all the claims.

7. *Novelty*

Since it has been indicated in Claim 1 that the total amount of alkali metal is 1 ppm or less, the subject-matter of that claim is considered as novel over D26.

8. *The patent in suit, the technical problem*

8.1 The patent in suit relates to flame resistant polycarbonate compositions.

8.2 According to the patent in suit, its aim is to provide flame resistant polycarbonate compositions having an improved moisture resistance (patent in suit paragraph [0004]).

- 8.3 Although flame resistant polycarbonate compositions are disclosed in document D1 which has been considered as the closest state of the art in the decision under appeal, the Board notes that document D26, in contrast to document D1, is clearly concerned by the moisture resistance of the flame resistant thermoplastic compositions (e.g. polycarbonate) disclosed therein.
- 8.4 Consequently, D26 would represent a more promising starting point than document D1 for the assessment of inventive step.
- 8.5 Starting from document D26, the technical problem may be seen in the provision of flame resistant polycarbonate compositions having an improved moisture resistance.
- 8.5 It has been admitted by the Appellant that the only difference between the subject-matter of Claim 1 of the first auxiliary request and D26 (Example 4) resides in the limitation of the total amount of alkali metal of 1 ppm or less in the composition.
- 8.6 In that respect, the Board notes that document D32 shows that a polycarbonate resin composition (composition 4) prepared by using a tetraphenyl bisphenol A diphosphate having a low acidity (0.03) and an ABS resin containing less than 0.5 ppm of sodium and less than 0.5 ppm of potassium exhibits a better moisture resistance than a composition (composition 2) prepared by using the same tetraphenyl bisphenol A diphosphate but an ABS resin containing 75 ppm of sodium and 75 ppm of potassium (i.e. an amount of potassium and sodium of at least 27 ppm of alkali metal

based on the total composition), since the weight average molecular weight of the polycarbonate resin falls only from 55609 to 53 240 for composition 4 instead of from 55 508 to 41 093 for composition 2 after 24 hours at 100°C (i.e. at a relatively high temperature) and 100% humidity (cf. D32, Table 2).

8.7 Thus, if one would consider, as submitted by the Appellant, that the composition 4 according to D32 also meets the requirements set out in Claim 1 for the total amount of alkali metal, it is credible that the claimed feature (low amount of alkali metal) provides an effective solution to the technical problem.

9. *Inventive step*

9.1 It remains to be decided whether the proposed solution was obvious to a person skilled in the art having regard to the relevant prior art.

9.2 Document D26 is totally silent on the amount of alkali metal in the flame resistant thermoplastic compositions disclosed therein. It cannot hence provide a hint to the solution proposed in the patent in suit.

9.3 Nevertheless the Board notes that document D4 clearly indicates that the presence of even trace amounts of alkali detracts from the hydrolysis resistance of polycarbonate/ABS compositions (D4, paragraph 3.4.3.2).

9.4 The Board further notes that document D7 (cf. page 5, line 53 to page 6, line 1) discloses that polycarbonate resin with outstanding water resistance can be obtained when using polycarbonate resin compositions in which

the content of alkali metal has been reduced to a very small amount.

- 9.5 Furthermore, it is also known from document D8 that ionic species in polycarbonate compositions cause polymer chain scission, polymer degradation and/or transesterification at high temperature. Document D8 teaches therefore to reduce the ion content in such compositions, for example by using an impact modifier having a very low ion content such as sodium and potassium ions content (page 3, line 15 to page 4, line 12).
- 9.6 In this connection, the Board further observes that document D17 (cf. translations thereof D18, and D18a) which discloses compositions comprising a polycarbonate resin, an ABS resin and a phosphate flame retardant having residence stability during molding (i.e. with low degradation at high temperature)) also teaches to maintain the total amount of alkali metals such as sodium, potassium as small as possible therein (cf. paragraphs [0003],[0013], and [0014], Claim 1).
- 9.7 Thus, the Board can only conclude that there is a convergent teaching in the prior art that the presence of alkali metal in polycarbonate compositions leads to chain scission and hence to reduction of the molecular weight when polycarbonate compositions are exposed to high temperature and moisture, and that this could be avoided by reducing the amount of alkali metal in such compositions.

- 9.8 Consequently, in the light of this convergent teaching, it is evident that the skilled person would not hesitate to reduce the amount of alkali metal in the polycarbonate composition of D26 in the expectation that the hydrolysis resistance of such composition, even at high temperature, would increase.
- 9.9 Under these circumstances, the fact, as submitted by the Appellant, that the improvement in terms of hydrolysis resistance might have surpassed the skilled person's anticipations in that respect, would not contribute anything to the creative effort of the skilled person and cannot make an obvious measure inventive (cf. also T 927/95 of 22 October 1998 (not published in OJ EPO, Reasons point 6), and T 551/89 of 20 March 1990 (not published in OJ EPO, Reasons point 4.4)).
- 9.10 Consequently, the subject-matter of Claim 1 of the first auxiliary request must be regarded as obvious over the cited prior art.
- 9.11 Since none of the requests of the Appellant can be granted, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

R. Young