

Publication in the Official Journal ~~Yes~~ / No

File Number: T 938/90 - 3.3.3
Application No.: 84 109 148.1
Publication No.: 0 169 926
Title of invention: Polyester composition

Classification: C08L 67/02

D E C I S I O N
of 25 March 1992

Proprietor of the patent: TEIJIN LIMITED
Opponent: HOECHST AKTIENGESELLSCHAFT

Headword:

EPC Article 123

Keyword: "Opposite requirements of Article 123(2) and (3) EPC - essential feature introduced during the examining procedure contrary to Article 123(2) EPC" (T 231/89 distinguished)

Headnote



Case Number : T 938/90 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 25 March 1992

Appellant :
(Proprietor of the patent)

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Respondent :
(Opponent)

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Decision under appeal :

Decision of Opposition Division of the European
Patent Office dated 8 August 1990, issued on
5 October 1990 revoking European patent
No. 0 169 926 pursuant to Article 102(1) EPC.

Composition of the Board :

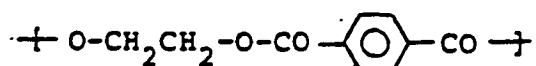
Chairman : C. Gérardin
Members : R. Spangenberg
R. Schulte

Summary of Facts and Submissions

- I. The European patent application No. 84 109 148.1 was filed on 2 August 1984 on the basis of five claims, Claim 1 reading as follows:

"A polyester composition comprising:

- (A) 100 parts by weight of a matrix polyester resin comprising at least 80 molar % of recurring ethylene terephthalate unit of the formula:



and

- (B) 0.2 to 7 parts by weight of a dispersoid in the form of primary fine solid particles and/or secondary agglomerates each consisting of a plurality of said primary fine particles, dispersed in said matrix polyester resin,

said dispersoid being such that, when said dispersoid is contained in a predetermined amount in a typical matrix polyester resin consisting of a polyethylene terephthalate having an intrinsic viscosity of 0.640, the resultant exemplary polyester composition satisfies the relationship (I):

$$\frac{(\dot{\eta}_1(w) - \dot{\eta}_1(0)) - (\dot{\eta}_2(w) - \dot{\eta}_2(0))}{\dot{\eta}_1 - \dot{\eta}_2} \geq 83w^2 + 275w + 42 \quad \text{--- (I)}$$

wherein w represents the amount in % by weight of said dispersoid based on the entire weight of said exemplary

polyester composition; $\dot{\gamma}_1$ and $\dot{\gamma}_2$ represent shearing rates of 0.01 sec^{-1} and 5.0 sec^{-1} , respectively; $\eta\dot{\gamma}_1(w)$ and $\eta\dot{\gamma}_2(w)$ represent melt viscosities in poise ($1/10 \text{ N}\cdot\text{sec}\cdot\text{m}^{-2}$) of said exemplary polyester composition containing $w\%$ by weight of said dispersoid, determined at shearing rates of $\dot{\gamma}_1$ and $\dot{\gamma}_2$, respectively; $\eta\dot{\gamma}_1(0)$ and $\eta\dot{\gamma}_2(0)$ represent melt viscosities in poise ($1/10 \text{ N}\cdot\text{sec}\cdot\text{m}^{-2}$) of said matrix polyester resin free from said dispersoid, determined at shearing rates of $\dot{\gamma}_1$ and $\dot{\gamma}_2$, respectively."

Claims 2 to 5 were dependent claims directed to preferred polyester compositions according to the main claim.

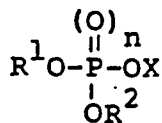
- II. The patent No. 0 169 926 in respect of that application was granted on 18 May 1988 practically on the basis of the original claims; besides three minor amendments in Claim 4, the only substantive amendment consisted in the incorporation into the main claim of the temperature of 275°C at which the melt viscosities were measured, so that the end of Claim 1 read: "... determined at 275°C and at shearing rates ..." (emphasis added by the Board). All these amendments had been proposed by the Examining Division together with the Advance Notice of the communication under Rule 51(4) EPC issued on 26 August 1987; they had subsequently been confirmed in the communication under Rule 51(4) EPC sent on 17 November 1987.

In the printed version of the patent, however, the relationship (I) did not correspond to the one mentioned above, which had been maintained unamended in the version proposed by the Examining Division.

- III. On 17 February 1989 the Opponent filed a Notice of Opposition by telefax, duly confirmed in writing on 18 February 1989, against the grant of the patent and

requested revocation thereof on the grounds of insufficient disclosure within the meaning of Article 100(b) EPC, as well as lack of novelty and inventive step (Article 100(a) EPC).

On 3 August 1989 the Patentee submitted an amended set of claims, the amendment consisting basically in the incorporation of Claim 4 into Claim 1, which was now drafted in the two-part form. More specifically, after the definitions of (A) and (B) which represented the preamble of the resulting main claim, it was mentioned in the characterising part that "said dispersoid is formed in such a manner that, in at least one stage of procedures for producing said matrix polyester resin, the reaction mixture is admixed with a mixture of (a) at least one phosphorous compound of the formula (II):



--- (II)

wherein R¹ and R² represent, independently from each other, a member selected from a hydrogen atom and monovalent organic radicals, respectively, X represents a member selected from a hydrogen atom, monovalent organic radicals, and metal atoms, and n represents zero or 1; (b) at least one alkaline earth metal compound in an amount such that the sum of the equivalent numbers of the metals contained in the above-mentioned phosphorous compound (a) and alkaline earth metal compound (b) is in the range of from 2.0 times to 3.2 times the molar amount of the phosphorous compound (a); and (c) a dispersing agent consisting of at least one member selected from quaternary ammonium compounds and quaternary phosphonium compounds and in an amount of 0.01 to 35 molar% based on the molar

amount of said phosphorous compound (a)." This was followed by the various features concerning the viscosity as in the granted version of the main claim, including thus the temperature of 275°C at which the melt viscosities were determined.

IV. By a decision delivered orally on 8 August 1990, with written reasons posted on 5 October 1990, the Opposition Division revoked the patent on the grounds that the subject-matter of Claim 1 extended beyond the content of the application as filed, and that the patent in suit did not define the alleged invention in a manner sufficiently clear for it to be carried out by a skilled person. More specifically, it was stated that the temperature of 275°C, at which the melt viscosities in Claim 1 were to be determined, was not disclosed in the original application; in particular, it was said that there was no indication that the sample, which was kept at 275°C under vacuum for a certain time, then stood in nitrogen under pressure at an unspecified temperature, was still at 275°C when subjected to measurement of melt viscosity. Regarding the objection of feasibility, it was said that for all polyesters other than polyethylene terephthalate having an intrinsic viscosity of 0.640, the invention did not meet the requirements of Article 83 EPC.

V. The Appellant (Patentee) thereafter lodged a Notice of Appeal on 6 December 1990 and paid the prescribed fee at the same time. Together with the Statement of Grounds of Appeal filed on 6 February 1991 the Appellant submitted a new main claim wherein the relationship (I) had been amended, the matrix resin allegedly limited to polyethylene terephthalate and the temperature of 275°C maintained.

Following a communication of the Board, wherein the Board took the view that the temperature of 275°C was not

adequately supported by the original application, the Appellant filed on 25 February 1992 a new set of 9 claims, Claim 1 to 8 being now drafted as use claims - use of a polyester composition comprising two components of A and B for producing fibres, filaments and films at high speed - and independent Claim 9 as product claim. The three independent Claims 1, 8 and 9, still mentioned the temperature of 275°C.

VI. Oral proceedings, which at the parties' request were conducted in the German language, were held on 25 March 1992. In support of the admissibility of the new version of the claims, the Appellant referred to the decisions G 2/88 and T 231/89, and further quoted the decision "Crackkatalysator" of the German Bundesgerichtshof (BGH). He argued in particular that, although an explicit statement as to the measurement temperature was not to be found in the original application, at least a range concerning that temperature was derivable therefrom; consequently, all the values within that range were individually disclosed, thus in particular 275°C. In any case, that issue could not be a ground of revocation if one followed the approach defined in the decision T 231/89.

VII. In response to these arguments the Respondent (Opponent) contended that, besides the fact that the specific measurement temperature was nowhere mentioned in the original application, the method given there concerned less the measurement itself than the preparation of the sample. The reference to the decision T 231/89, wherein the non-supported feature was regarded as non-critical for the substantive issues, was inappropriate in view of the considerable influence of temperature on melt viscosity. Similarly, the reasons given by the BGH in the decision "Crackkatalysator", could not be applied to the present situation, wherein a critical temperature was missing.

VIII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of Claims 1 to 9 filed on 25 February 1992.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal complies with Articles 106 and 108 and Rule 64 EPC and is admissible.
2. Apart from the general problem of admissibility of the claims under Article 123(2) EPC and the specific problem arising from the presence of the temperature of 275°C in the independent claims, which will be dealt with hereinbelow, the wording of the claims calls for the following preliminary comments.
 - 2.1 From points II and V above, it appears that the present set of claims results from a two-fold modification of the granted version of the claims.
 - 2.1.1 The first modification concerns the category of claims, since the claims as granted were directed to a polyester composition, whereas the present set of claims concerns, first, the use of such a polyester composition for producing fibres, filaments and films at high speed according to Claims 1 to 8, and, secondly, the polyester composition itself according to Claim 9. In accordance with the reasons given in the decision G 2/88 "Friction reducing additive/MOBIL OIL III" published in OJ EPO 1990, 93, upon which the Appellant relied in the statement submitted on 25 February 1992, such change of category of claims is not open to objection under Article 123(3) EPC (see Reasons for the Decision, points 3 and 4).

2.1.2 The second modification concerns the number of claims. Whereas the granted version of the claims comprised five composition claims, the present set of claims consists of eight use claims and one composition claim. It is self-evident that these eight use claims do not just derive from the five composition claims as granted by a simple redrafting involving only a change of category, but that they include subject-matter not originally claimed as such; this applies in particular to Claims 2, 3 and 8 which have no counterpart in the patent as granted. As laid down in the decision T 295/87 "Polyetherketones ICI" published in OJ EPO 1990, 470, such additional claims represent amendments which go beyond the objections to validity actually raised and are not, therefore, either necessary or appropriate within the Rules 57 and 58 EPC. In other words, opposition proceedings are not an opportunity for the Patentee to prepare amendments to a granted patent for purposes which are not clearly related to meeting a ground of opposition raised under Article 100 EPC. In particular, they do not provide an opportunity to include new subject-matter in the claims, which may have adequate support in the original description, but has not previously been claimed as such (see Reasons for the Decision, point 3).

2.2 A further point concerns the intrinsic viscosity of polyethylene terephthalate used as matrix polyester resin, which is merely defined in Claims 1, 8 and 9 as being 0.640. As indicated in the patent specification (see page 5, lines 13 to 16), this parameter is in fact determined in o-chlorophenol at a temperature of 35°C. Since the conditions of measurement have an influence on the value of the intrinsic viscosity, these specific

conditions should be indicated in all the claims where this parameter occurs.

- 2.3 Although the wording of the claims is thus objectionable in several respects, the Board specified at the start of the oral proceedings that the afore-mentioned deficiencies would only be dealt with if a positive answer could be given to the question of admissibility of the present claims under Article 123(2) EPC in the terms raised by the Opposition Division.
3. If one leaves the question of the support of the temperature of 275°C out of account, the wording of the claims does not give rise to any objections under Article 123 EPC.

With the exception of the formulation as use claim, which is not objectionable under Article 123(3) EPC for the reasons given above, Claim 1 differs in substance from Claim 1 as printed in the patent specification by the fact that the relationship (I), the unit sec^{-1} after the upper limit of the range of shearing rates as well as the use of "y" instead of " γ " and " ηy " instead of " $\eta \gamma$ " to designate respectively the shearing rates and the melt viscosities have been brought in line with the text on the basis of which the patent was granted (see communication under Rule 51(4) EPC dated 17 November 1987). As to the specific uses of the polyester composition, they are mentioned on page 2, lines 5 to 11 of the patent specification corresponding to page 1, lines 3 to 14 of the application as originally filed.

Claims 2 and 3, which are directed to a high speed melt-spinning process (Claim 2), wherein the spinning speed is 5000 m/min or more (Claim 3), are two of the additional claims referred to above; these features are specified on

page 11, lines 44/45 of the patent specification corresponding to page 28, lines 10 to 13 of the original application.

With the exception of their formulation as use claims, Claims 4 to 7 are identical with Claims 2 to 5 as granted, which in turn correspond to Claims 2 to 5 as originally filed, the amendments proposed by the Examining Division in Claim 4 (now Claim 6) being of editorial nature without impact on the scope of that claim.

Claim 8, which is another additional claim without counterpart in the patent as granted, is an independent use claim directed to the use of a dispersing agent for stabilising a dispersoid containing polyester composition. It combines the technical features mentioned in Claims 1 and 4 as filed and granted; further, the remark concerning the symbols used to designate the shear rates and the melt viscosities applies here as well.

As far as Claim 9 drafted as a composition claim is concerned, it can be regarded as a combination of Claims 1 and 4 as granted, wherein the relationship (I) has been amended and the symbols for shearing rates and melt viscosities have been changed as above. The reasons given above in favour of the admissibility of Claims 1 and 6 apply thus as well.

4. It follows that the issue of admissibility under Article 123(2) EPC boils down to the question of whether the presence of the temperature of 275°C in Claims 1, 8 and 9 offends this article or not.
- 4.1 In the first place, it is essential to appreciate how the measurement of melt viscosity as such influences the definition of the polyester composition and, thereby, the

scope of the three independent claims. Examination of relationship (I) shows that the essential feature is less the specific value of melt viscosity considered in isolation than the difference of two melt viscosities, namely the melt viscosity of the exemplary polyester composition containing w% by weight of the dispersoid and the melt viscosity of the matrix polyester resin free from the dispersoid (see patent specification, page 3, lines 62 to 65). As specified in the patent in suit, the effect resulting from the presence of the dispersoid particles is not independent of the molecular weight of the polyester (see page 5, lines 44 to 48). In particular, when the size of the dispersoid particle is $1/3$ times or less the average length of the polyester molecular chain, the length of the polyester molecular chain is long enough to wind at least one time around the dispersoid particle. That is, the dispersoid particles in the average size of $1/3$ or less of the average length of the polyester molecular chains are not negligible against the movement of the polyester molecular chains, that is, are effective for restricting the movement of the polyester molecular chains. During oral proceedings the Board raised the point that the interaction between polymer and dispersoid must be influenced by temperature and that, consequently, the difference in melt viscosity between a polyester containing that dispersoid and a matrix polyester resin was itself influenced by the temperature. This was not disputed by the Appellant.

- 4.2 Whether one regards the method described on page 30, line 16 to page 31, line 11 as pertaining to the determination of melt viscosity, as argued by the Appellant, or to the preparation of the sample, as argued by the Respondent, is irrelevant for the issue of the present decision, since the objection raised by the Opposition Division does not concern the disclosure of a

temperature of 275°C as such, but the disclosure of that temperature in connection with the actual measurement of that parameter.

Although a temperature of 275°C is mentioned in the above-mentioned passage, this value cannot be regarded as the actual temperature of determination of melt viscosity. It is specified there that "the polyester composition to be tested, which was in the form of chips having a length of 4 mm, a width of 4 mm, and a thickness of 2 mm, was heated to a temperature of 285°C under a high vacuum of 1 mmHg, was maintained at this temperature for 20 minutes, was cooled to a temperature of 275°C for 3 minutes while the vacuum was maintained at the above-mentioned value while the sample was protected from oxidation thereof, was maintained at 275°C for 17 minutes, was kept standing in a nitrogen gas atmosphere under a pressure of 2 kg/cm² for 20 minutes, while a Weissenberg effect on the liquid sample is prevented, and thereafter, the sample was subjected to measurement". As pointed out by the Board during oral proceedings, the sample, after being kept at a higher pressure for 20 minutes, is not likely to still be at the temperature of 275°C, as alleged by the Appellant.

Without disputing that fact, the Appellant argued nevertheless that at least a range encompassing the value of 275°C, wherein the polyester composition is known to be a liquid, is disclosed in the application as originally filed. Following the passage on page 28, lines 16 to 18, "the melt-spinning process is carried out usually at an extrusion temperature of from 260 to 330°C". This could be regarded as a general range of temperatures not only suitable to carry out that process, which by definition requires the polymer composition to be in the liquid state, but consequently equally appropriate to measure the melt viscosity.

- 4.3 Even if, for the sake of argument, one ignores the context in which that range is disclosed, this does not support the Appellant's view that any temperature within that range would be suitable to measure the melt viscosity in the framework of the above-mentioned method.

As demonstrated by the Respondent on the basis of both theoretical considerations and practical calculations showing the exponential influence of temperature on melt viscosity (Polyesterfasern, Chemie und Technologie, by Dr. Hermann Ludwig, pages 180 to 185, 1975, Akademie-Verlag Berlin), this parameter decreases from 1 at 270°C to 0.75 at 275°C and to 0.56 at 380°C. This shows that in the absence of a specific temperature originally disclosed as the temperature of measurement of melt viscosity, there is no indication whatsoever what the melt viscosity of a matrix polyester resin, which is a reference value, should be. Further, since a filled polymer would be differently affected by temperature changes in view of the interaction between the dispersoid and the matrix polyester resin, the numerator of relationship (I), wherein the difference between the melt viscosities appears, is itself a function of the temperature. This means that the definition of the polyester compositions and, thereby, the scope of the three independent claims is not identical throughout the range from 260 to 330°C; this means as well that the introduction of 275°C, which is nothing more than an arbitrary temperature within the range wherein the polyester composition is known to be liquid, results in a particular definition of these compositions which was not originally disclosed.

- 4.4 This fact is essential when one tries to draw a parallel between the present case the decision of the BGH referred to by the Appellant. In that decision the BGH took the

view that a narrower definition of a catalyst composition within the scope of the original definition was admissible, even if the limits of the new range were not originally explicitly disclosed; this was justified by the fact that all the individual values within the original range would be regarded by the skilled man as pertaining to the same type of catalyst, thus implicitly disclosed and equally suitable for the purpose of that invention. In other words, all the intermediate values were fully in line with the original teaching.

These conditions are not met in the present case because of the influence of temperature on both the melt viscosity and the interaction between polyester and dispersoid. Although a melt viscosity can in principle be determined for a matrix polyester resin free from the dispersoid as well as for a combination of polyester and dispersoid for any temperature between 260 and 330°C, each temperature will result in a different definition of the invention as claimed. This applies in particular to 275°C introduced for the sole reason that the original description was deficient and that at least one specific definition of the polyester composition was necessary in order to overcome a general objection under Article 83 EPC. That temperature corresponds thus to an arbitrary selection within the known range resulting in a specific definition of the polyester compositions, which is different from the definition obtainable from any other discrete value within that range and nowhere disclosed in the original application.

- 4.5 Similar considerations apply to the decision T 231/89 of 14 June 1991 "Flat torsion spring/BRUYNZEEL" (to be published), wherein the Board took the view that the feature introduced contrary to Article 123(2) EPC during the examining procedure had to be maintained in the claim

because of the requirements of Article 123(3) EPC, but was technically meaningless and consequently not to be considered when examining novelty and/or inventive step (see Reasons for the Decision, points 3.1 and 3.4).

The situation in the present case is entirely different. Although it is correct, as agreed by the parties, to maintain the temperature added by the Examining Division in view of the requirements of Article 123(3) EPC, that feature is not technically meaningless at all. As stated above, on the contrary, the temperature at which the melt viscosities are determined has a considerable influence on the values of that parameter as well as on the interaction between matrix and dispersoid, and thereby on the definition of the polyester composition; it follows that it cannot be disregarded when assessing novelty and/or inventive step. Although the following consideration is irrelevant for the purpose of the present decision, the Board notes that, if the Appellant's approach based on the conclusions in the decision T 231/89 were to be followed, the subject-matter of independent Claim 9 would boil down to a simple mixture of a polyester resin and a dispersoid as defined in the patent specification; in the Board's view, such a binary composition could hardly be novel.

As the present situation differs materially from that underlying the decision T 231/89, it is appropriate to reach the opposite conclusion. The Board, therefore, does not see any reason to refer the case to the Enlarged Board of Appeal according to the Appellant's auxiliary request of 25 February 1992, no longer maintained in oral proceedings.

- 4.6 For these various reasons the temperature of 275°C in Claims 1, 8 and 9 represents an amendment of the original application which offends Article 123(2) EPC.

5. Claim 1 not being admissible, the same applies to dependent Claims 2 to 7, whose subject-matter is equally defined by the relationship (I) and which thus fall with it.

6. In view of that conclusion it is not necessary to deal with the issue of insufficient disclosure which was the second ground of rejection.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar:


E. Gorgmaier

The Chairman:


C. Gérardin