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**Datasheet for the decision
of 11 November 2010**

Case Number: T 1085/08 - 3.3.09

Application Number: 98951742.0

Publication Number: 0952173

IPC: C08J 3/20

Language of the proceedings: EN

Title of invention:

Modified thermoplastic resin composition and method of producing the same

Applicant:

TEIJIN LIMITED

Opponent:

-

Headword:

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Relevant legal provisions:

EPC Art. 54, 84, 111(1), 123(2)

Relevant legal provisions (EPC 1973):

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Keyword:

"Amendments - added subject-matter (no)"

"Clarity (yes)"

"Novelty (yes)"

Decisions cited:

G 0010/93

Catchword:

-



Case Number: T 1085/08 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 11 November 2010

Appellant:
(Applicant)

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office announced orally on
20 September 2007 and posted on 18 October 2007
refusing European application No. 98951742.0
pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chairman: W. Sieber
Members: N. Perakis
K. Garnett

Summary of Facts and Submissions

- I. European patent application No. 98951742.0 was filed in the name of Teijin Limited as PCT/JP98/05035, claiming priority from JP application No. 30736297 of 10 November 1997, and was published as WO 99/24495. The application was refused by a decision of the Examining Division announced orally on 20 September 2007 and issued in writing on 18 October 2007.

The decision was based on a main and a first auxiliary request filed respectively with letters dated 23 June 2006 and 20 August 2007. Auxiliary requests 2 and 3 submitted during the oral proceedings before the Examining Division were not admitted into the procedure. Claim 1 of the refused main request read as follows:

"1. A process for preparing a modified thermoplastic resin which comprises incorporating a modifier-containing thermoplastic resin in a molten state which contains at least one type of modifier into the transport line of a continuously polymerized thermoplastic resin in a molten state for continuous production of a modifier-containing thermoplastic resin composition, wherein the thermoplastic resin continuously polymerized in said transport line and said modifier-containing thermoplastic resin are subjected to both static mixing involving no external power and to forceful dynamic mixing by external power."

Claim 1 of the auxiliary request differed from Claim 1 of the main request in that at the end the words "in the transport line" had been added.

II. The Examining Division refused the patent application because the subject-matter of the independent claims of both requests lacked novelty over the disclosure of **D1: US-A-4 898 897**. The Examining Division's essential argument was that the forceful and dynamic mixing required in the claimed process did not differ from the mixing taking place in the polycondensation reactor 10 of D1.

III. On 10 December 2007 the applicant (appellant) lodged an appeal against the decision of the Examining Division and paid the appeal fee on the same day. Together with the statement setting out the grounds of appeal the appellant filed on 21 February 2008 three auxiliary requests.

The appellant contested the decision of the Examining Division and argued that the subject-matter of the main request was novel over D1. Its essential argument was that the skilled person would not consider that the mixing occurring in the polycondensation reactor 10 of D1 was a forceful dynamic mixing.

IV. In a communication dated 27 May 2010, accompanying the summons to oral proceedings to be held on 11 November 2010, the Board raised objections against the subject-matter of the main and the auxiliary requests with regard to clarity and novelty.

V. With its letter of reply dated 10 September 2010 the appellant filed new requests, namely a main request and three auxiliary requests, replacing the previous requests on file.

VI. Oral proceedings were held before the Board on 11 November 2010. During the proceedings the appellant filed a new main request. Claim 1 reads as follows:

"1. A process for preparing a modified thermoplastic resin composition which comprises incorporating a modifier-containing thermoplastic resin in a molten state which contains at least one type of modifier into the transport line of a continuously polymerized thermoplastic resin in a molten state for continuous production of a modifier-containing thermoplastic resin composition, wherein the thermoplastic resin continuously polymerized in said transport line and said modifier-containing thermoplastic resin are subjected to both static mixing involving no external power and to forceful dynamic mixing by external power, wherein the static mixing involves repeated division of the modified thermoplastic resin stream in a cross-section perpendicular to the direction of flow and mixing by dispersion and distribution and wherein dynamic mixing involves feeding the modified thermoplastic resin to a dynamic mixing apparatus which is a can-like mixing tank with a mixing blade driven by external power and/or a kneading extruder equipped with a mixing blade driven by external power and mixing for a residence time in the dynamic mixing apparatus less than 15 minutes and wherein the total mixing number N of the dynamic mixing apparatus is 100 or greater where the total mixing number N is defined by the equation: total mixing number N(times) = rotation rate of the mixing blade (rpm) x residence time in the dynamic mixing apparatus (min)."

- VII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the main request filed during the oral proceedings, alternatively on the basis of the first, second or third auxiliary requests filed with the letter dated 10 September 2010.
- VIII. The relevant arguments presented by the appellant at the oral proceedings in favour of the novelty of the claimed subject-matter were the following:
- The skilled person would not consider that the mixing taking place in the polycondensation reactor (10) of D1 was a forceful dynamic mixing as defined in the claimed subject-matter.
 - The now claimed dynamic mixing was defined not only by the type of dynamic mixing apparatus but also by the residence time and the total mixing number N.
 - These features established that a different type of shear was used in the claimed dynamic mixing compared to that used in the polycondensation reactor of D1.

Reasons for the Decision

1. The appeal is admissible.
2. The main request of the appellant overcomes all clarity issues previously raised by the Board. In particular, the "forceful dynamic mixing" has been clearly defined by the incorporation of the relevant technical features into Claim 1. Furthermore, the wording of original Claim 20 (now Claim 16) has been amended to become more intelligible. Consequently the claimed subject-matter

is considered to fulfil the requirements of Article 84 EPC.

3. Amendments under Article 123(2) EPC

3.1 The subject-matter of Claim 1 is based onto originally filed Claim 1 into which further limiting features have been inserted:

- The feature that the claimed method relates to "the preparation of a modified resin composition" finds support on original page 8, lines 25-26.
- The feature that the continuously polymerized thermoplastic resin and the modifier-containing thermoplastic resin are "in a molten state" finds support on page 8, line 24-31. In fact, this is the only physical state of the thermoplastic resin disclosed in the originally filed application.
- The feature that the "static mixing involves repeated division of the modified thermoplastic resin stream in a cross-section perpendicular to the direction of flow and mixing by dispersion and distribution" finds support on page 16, lines 21-25. It relates to the broadest definition given in the originally filed application for static mixing.
- The feature that the "dynamic mixing involves feeding the modified thermoplastic resin to a dynamic mixing apparatus which is a can-like mixing tank with a mixing blade driven by external power and/or a kneading extruder equipped with a mixing blade driven by external power" finds support on page 17, line 25 to page 18, line 4. It also relates to the broadest definition given in the originally filed application for dynamic mixing.

- The feature that "mixing for a residence time in the dynamic mixing apparatus for a residence time less than 15 minutes" finds support on original page 19, lines 6-11 and concerns the most preferred residence time of dynamic mixing.
- The feature that "the total mixing number N of the dynamic mixing apparatus is 100 or greater where the total mixing number N is defined by the equation: total mixing number N (times) = rotation rate of the mixing blade (rpm) x residence time in the dynamic mixing apparatus (min)" finds support in original Claim 3 and the disclosure of page 18, line 28 to page 19, line 1. It expresses the condition which satisfies the requirement of the prescribed residence time in the dynamic mixing apparatus in order to eliminate streaking with time (cf page 18, lines 25-31).

Thus not only each individual feature of the subject-matter of Claim 1 but also their combination is clearly and unambiguously derivable from the originally filed application.

3.2 Dependent process Claims 2-24 find support in originally filed dependent process Claims 2, 4, 5, 9-22 and product-by-process Claims 23-28, which have been reformulated to process claims.

4. Novelty under Article 54 EPC

4.1 According to the appealed decision the then claimed subject-matter lacked novelty in view of the disclosure of D1. Indeed D1 (abstract; Claim 9; column 4, line 41 to column 5, line 3; Figures 2 and 8; column 8,

lines 6-35 and 58-66; Example 3) discloses a process for preparing a modified thermoplastic resin composition, namely a polyester resin composition containing at least 10 wt% of a white inorganic pigment dispersed in a polyester resin. In particular Figure 2 and the corresponding part of the description (column 8, lines 6-35) disclose a schematic diagram of the system components used to put this process into practice. According to this diagram a modifier-containing thermoplastic resin in the molten state, which contains as modifier a white inorganic pigment, is incorporated into the transport line of a continuously polymerized thermoplastic resin in the molten state. The resulting composition is driven through a static mixer (9) and through a polycondensation reactor (10). This polycondensation reactor is considered by the Board, in agreement with the Examining Division, to be indistinguishable from the dynamic mixing apparatus of Claim 1, a view which led to the refusal of the application by the Examining Division.

- 4.2 In order to clearly delimit the claimed process from the disclosure of D1, the appellant has now included in Claim 1 technical features which specify the static and dynamic mixing apparatus and their operation conditions. Thus the static mixer has a specific configuration which allows mixing by dispersion and distribution and the dynamic mixing apparatus allows mixing of the resin composition under specific conditions, namely a residence time of less than 15 minutes and a total mixing number N of 100 or greater.

The Board notes that such a specific process is not disclosed by D1. The process illustrated in Example 3

of this document is closest to the claimed process and discloses a residence time in the polycondensation reactor of 18 minutes. Furthermore, no rotation rate is disclosed which would enable the skilled reader to derive the corresponding total mixing number N. Nor would the person skilled in the art consider that the total mixing number N of the polycondensation reactor of D1 implicitly meets the requirement of Claim 1. As convincingly argued by the appellant, the skilled person would contemplate in the operation of the polycondensation reactor (10) of D1 gentle agitation requiring a rotation rate much lower than that required in Claim 1. In fact, the type of shear sought in a polycondensation reactor is quite different from that sought in a forceful dynamic mixer.

4.3 In view of the above considerations the subject-matter of independent Claim 1 and consequently that of dependent Claims 2-24 is novel over the disclosure of D1.

5. Remittal

5.1 Having so decided, the Board has not, however, taken a decision on the whole matter, since substantial amendments have been made to independent Claim 1 during the appeal phase to overcome the objections under Articles 84, 123(2) and 54 EPC. The decision under appeal dealt exclusively with lack of novelty over one specific document, namely D1, according to the then pending requests, and did not consider Claim 1 in the present form. The amendments leading to the fresh Claim 1 have the effect that the reasons given in the

contested decision for refusing the present application no longer apply.

- 5.2 Thus the Board considers that the substantial amendments made by the appellant remove the objection on which the decision under appeal was based and that present Claim 1 generates a fresh case requiring further examination. In this context, the Board notes that apart from D1 further documents are cited in the International Search Report and the Supplementary European Search Report which might be relevant, in particular for the assessment of inventive step of the claimed subject-matter.
- 5.3 While Article 111(1) EPC gives the Boards of Appeal the power to raise fresh issues in *ex-parte* proceedings where the application has been refused for other issues, proceedings before the Boards of Appeal in *ex-parte* cases are primarily concerned with examining the contested decision (see decision G 10/93, OJ EPO 1995, 172, points 4 and 5 of the reasons). In the circumstances of this case, for the reasons given in paragraph 5.2, the Board is also in no real position to examine the subject matter of the claims for inventive step.
- 5.4 Under these circumstances, the examination not having been concluded, the Board considers it appropriate to exercise its power conferred by Article 111(1) EPC, to remit the case to the Examining Division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further examination.

The Registrar:

The Chairman:

C. Eickhoff

W. Sieber