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**Datasheet for the decision
of 20 April 2021**

Case Number: T 0671/17 - 3.3.09

Application Number: 11290277.0

Publication Number: 2537883

IPC: C08J11/04, C08K9/04, C09C1/02

Language of the proceedings: EN

Title of invention:

Methods and compositions related to recycling polymer waste

Patent Proprietor:

IMERTECH SAS

Opponent:

OMYA International AG

Headword:

Recycling polymer waste/IMERTECH

Relevant legal provisions:

EPC Art. 100(a), 56, 83

RPBA Art. 12(4)

RPBA 2020 Art. 13(2)

Keyword:

Grounds for opposition - insufficiency of disclosure (no)

Inventive step - (yes)

Amendment after summons - exceptional circumstances (no)

Decisions cited:

Catchword:



Beschwerdekammern

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Chambres de recours

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Case Number: T 0671/17 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 20 April 2021

Appellant:

(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 4 January 2017
revoking European patent No. 2537883 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman

A. Haderlein

Members:

M. Ansorge

E. Kossonakou

Summary of Facts and Submissions

- I. The appeal was filed by the proprietor (appellant) against the opposition division's decision revoking European patent No. 2 537 883.
- II. With its notice of opposition, the opponent had requested that the patent be revoked on the grounds for opposition under Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC.
- III. In the present decision, reference is made to the following documents:
- E1a: WO 92/15640 A1
- E3a: "Three reasons why the plastics recycling industry is using OMYAFILM®"
- E3b: Google search result for "omyafilm for recycling machinery"
- E6: "Properties of Recycled Plastics from HDPE Drinking Water Bottles", S. Chariyachotilert et al., Kasetsart J. (Nat. Sci.) 40:166-171 (2006)
- E7: WO 03/080720 A1
- E11: "Development of Cockleshell-Derived CaCO₃ for Flame Retardancy of Recycled PET/Recycled PP Blend", S. Thumsorn et al., Materials Sciences and Applications, 2011, 2, pages 59-69
- E12: "Nanofillers improve the mechanical properties of recycled polypropylene", S. Pimbert et al., Society of Plastics Engineers
- E15: "The EREMA plastics recycling system"
- E17: "Omyafilm® - Calcium Carbonate Compounding on Recycling Machines"

- IV. The opposition division decided that the subject-matter of claim 1 as granted lacked novelty and the subject-matter of the then auxiliary requests 1 and 2 did not involve an inventive step in view of Ela as the closest prior art.
- V. With the statement setting out the grounds of appeal, the appellant filed a main request and 11 auxiliary requests.
- VI. In preparation for oral proceedings, the board issued a communication indicating its preliminary opinion.
- VII. At the oral proceedings, the appellant withdrew the main request and auxiliary requests 1 and 2.
- VIII. The only claim request relevant in this case is auxiliary request 3.

Claims 1, 2 and 3 of auxiliary request 3 read as follows (differences from the corresponding claims as granted have been shown struck through).

"1. A process for recycling post-consumer polymer waste material comprising:
providing at least one post-consumer waste polymer;
cleaning the post-consumer waste polymer;
providing a functional filler comprising:
i. an inorganic particulate; and
ii. a coating comprising a first compound including a terminating ~~propanoic group~~ or ethylenic group with one or two adjacent carbonyl groups; and
combining the post-consumer waste polymer and the functional filler to form a recycled polymer, wherein the functional filler is present in an amount equal to

or greater than 10% by weight of waste polymer."

"2. A process for recycling polymer waste material comprising:

providing at least one waste polymer;

cleaning the waste polymer in a first process step;

cleaning the waste polymer in a second process step;

providing a functional filler including:

i. an inorganic particulate; and

ii. a coating comprising a first compound including a terminating ~~propanoic group~~ or ethylenic group with one or two adjacent carbonyl groups; and

combining the waste polymer and the functional filler to form a recycled polymer, wherein the functional filler is present in an amount equal to or greater than 10% by weight of waste polymer."

"3. A process for recycling polymer waste material comprising:

providing at least one waste polymer;

dry cleaning the waste polymer;

providing a functional filler including:

i. an inorganic particulate; and

ii. a coating comprising a first compound including a terminating ~~propanoic group~~ or ethylenic group with one or two adjacent carbonyl groups; and

combining the waste polymer and the functional filler to form a recycled polymer, wherein the functional filler is present in an amount equal to or greater than 10% by weight of waste polymer."

Claim 10 of auxiliary request 3 reads as follows:

"A recycled polymer composition, obtainable by the process of any one of claims 1-9."

Claims 4 to 9 of auxiliary request 3 are dependent process claims, claims 11 and 12 are dependent on claim 10, and claims 13 and 14 are use claims, directly or indirectly referring back to a functional filler as defined in claim 1, 2 or 3.

IX. Requests

The appellant requests that the decision be set aside and that the patent be maintained on the basis of one of auxiliary requests 3 to 11, all filed with the statement setting out the grounds of appeal.

The opponent (respondent) requests that the appeal be dismissed.

Reasons for the Decision

AUXILIARY REQUEST 3

1. Admission of auxiliary request 3
 - 1.1 The respondent requested that auxiliary request 3 not be admitted into the proceedings since it was a new request which was not filed during the first-instance proceedings. The deletion of "propanoic group" in auxiliary request 3 significantly changed the scope of the claims and represented a new approach for defending the patent that should have been filed before the opposition division.
 - 1.2 Auxiliary request 3 was filed with the statement setting out the grounds of appeal. The process according to each of claims 1 to 3 of auxiliary

request 3 differs from each of claims 1 to 3 of the patent as granted in that the alternative "propanoic group" has been deleted. As a result, these claims are restricted to the alternative "ethylenic group" which was already present in the claims as granted. The board found that auxiliary request 3 was a legitimate and reasonable reaction to the decision under appeal, so it decided not to exclude it from the proceedings (Article 12(4) RPBA 2007).

2. Sufficiency

- 2.1 The respondent contested that the invention could be carried out. In particular, it argued that the feature "wherein the functional filler is present in an amount equal to or greater than 10% by weight of waste polymer" in claims 1 to 3 was not precisely defined since it merely explained the amount of functional filler without stating whether the filler was to be added to the waste polymer or may already be part of the waste polymer. In the respondent's view, this ambiguity was not only a matter of clarity but amounted to a lack of sufficiency.
- 2.2 While it is true that the processes defined in claims 1 to 3 could be considered to be vague with respect to the feature of the amount of functional filler, the board finds that this is merely a matter of clarity and not of sufficiency. Claims 1 to 3 define multi-step recycling processes and provide sufficient guidance for a skilled person to carry out the invention. At most, the ambiguity with respect to the amount of functional filler renders the scope of the claims vague, but it does not prevent a skilled person from carrying out each process step.

In view of the above, the requirement of Article 83 EPC is met.

3. Novelty

3.1 During the written appeal proceedings, no novelty objection was raised against the subject-matter claimed in auxiliary request 3. During the oral proceedings before the board, the respondent raised a novelty objection for the first time against the subject-matter of claim 10 of auxiliary request 3 in view of E7. The appellant requested that this objection not be admitted into the proceedings.

3.2 According to Article 13(2) RPBA 2020 any amendment to a party's appeal case after notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances which have been justified with cogent reasons by the party.

3.3 The new novelty objection amounts to an amendment to the respondent's appeal case in particular because, as set out above, no novelty objection against auxiliary request 3 had been raised until the oral proceedings. This change took both the appellant and the board by surprise, and there were no substantiated exceptional circumstances which could justify admitting this objection into the proceedings at such a late stage. The respondent's argument that the board interpreted the feature "terminating propanoic group ..." differently from the opposition division (see the board's communication) is not sufficient. Any such differences in interpretation and/or approach are to be inherently expected given that the appeal proceedings are a judicial review of the opposition case. Moreover,

the argument is unconvincing because said feature is not present in the claims of auxiliary request 3.

It follows that the novelty objection against claim 10 of auxiliary request 3 in view of E7 is not taken into account (Article 13(2) RPBA 2020).

4. Inventive step

- 4.1 The respondent raised inventive-step objections against the subject-matter of claim 1 of auxiliary request 3 starting from E1a, E3a, E6, E11, E12 and E17 as the closest prior art.

The appellant requested that the inventive-step objections starting from E6, E11, E12 and E17 not be admitted. In addition, it contested that there was sufficient evidence on file that E3a had been made available to the public before the filing date of the patent.

4.2 Public availability of E3a

E3a is an Internet publication without a date. As evidence that E3a was available to the public before the filing date of the patent, the respondent filed E3b and E15. However, neither document is suited to prove that E3a was available to the public in time. E3b does not unambiguously demonstrate that the PDF document entitled "Three reasons why the plastics recycling industry is using ..." mentioned in E3b is the exact one shown as E3a. In fact, E3b is merely a Google search carried out at a later date for the combined terms "omyafilm for recycling machinery". Page 3 of E15 shows a small picture which, though similar to the cover sheet of E3a, is illegible.

Under these circumstances, there is no sufficient evidence on file that E3a was made available to the public before the filing date of the patent. As a consequence, E3a cannot constitute prior art, let alone the closest one.

4.3 Admission of the inventive-step objections starting from E6, E11, E12 and E17 as the closest prior art

The respondent submitted the inventive-step objections using E6, E11, E12 and E17 as the closest prior art about three months before the oral proceedings, after the board's communication in which it stated that there seemed to be no conclusive argumentation on file to support the assertion that the subject-matter of claims 1 to 3 or any other claim of auxiliary request 3 might be obvious in view of the prior art.

The inventive-step objections using E6, E11, E12 and E17 as the closest prior were filed after notification of a summons to oral proceedings and represent, beyond any doubt, an amendment to the respondent's appeal case. There are no exceptional circumstances which could justify admitting these new inventive-step objections into the proceedings. A statement given in the board's communication cannot qualify as an exceptional circumstance, in particular when that statement merely highlights the current state of the file.

Therefore, the inventive-step objections using E6, E11, E12 and E17 as the closest prior art are not taken into account (Article 13(2) RPBA 2020).

- 4.4 As a consequence, the only remaining inventive-step objection is the one starting from E1a as the closest prior art.
- 4.4.1 E1a describes a method for making a composite foam extruded product which simulates lumber, comprising the steps of continuously supplying to an extruder used polyolefinic material derived from residential, commercial or industrial waste; blending with said polyolefinic material an alkali metal bicarbonate and a saturated fatty acid which is solid at room temperature; extruding a melt of said blend through a profile die; forming a foaming agent and a lubricant for said blend by the *in situ* reaction of said bicarbonate and said fatty acid; feeding the lubricated blend from said die into a sizing zone wherein the blend is foamed to substantially its final cross-section; cooling the thus-foamed material in said sizing zone so as to rigidify the foamed material; and forcing and pulling the rigidified material through and from said sizing zone (see in particular claim 21 of E1a).
- 4.4.2 The process of claim 1 of auxiliary request 3 differs from E1a in that the process of E1a does not apply an inorganic particulate that has a coating comprising a compound that includes a terminating ethylenic group with one or two adjacent carbonyl groups.

While the respondent agreed that E1a does not mention a compound comprising a terminating ethylenic group with one or two adjacent carbonyl groups, the respondent argued that E1a implicitly discloses at least a stearic acid-coated filler (see example 3 and page 4, lines 10 to 23 of E1a). The respondent argued that the passage "Sodium stearate, along with unreacted stearic acid,

helps disperse the filler material during extrusion" on page 4, lines 15 and 16 of Ela necessarily meant that stearic acid-coated fillers were formed.

However, there is no evidence in Ela for this assumption. Referring to other documents relating to different aims, process conditions and technical fields cannot support this assumption by the respondent. In addition, Ela does not explain how to construe the passage "Sodium stearate, along with unreacted stearic acid, helps disperse the filler material during extrusion". It does not contain any teaching on how unreacted stearic acid might help disperse the filler during extrusion. The sentence "The stearate also lubricates the melt in the extruder ..." (see page 4, lines 17 to 19 of Ela) cannot be taken to mean that unreacted stearic acid necessarily forms a coating on the filler particles before the extrusion step. The only information which can be clearly taken from Ela is that stearate lubricates the melt in the extruder, yet this does not necessarily require a coated filler.

In view of the above, the board concludes that Ela does not disclose a coated functional filler as required in claim 1 of auxiliary request 3.

4.4.3 In addition, Ela does not disclose a (stearic acid-) coated filler being formed before a step in which it is combined with the post-consumer waste polymer. This is, however, required in claim 1 since it is the functional filler already comprising the coating which is combined with the post-consumer waste polymer.

4.4.4 According to the appellant, the claimed process resulted in improved properties of the waste polymer. However, even if it were accepted that there was no

effect resulting from the differences over E1a, leading to an objective technical problem merely of providing an alternative process for recycling polymer waste, the process in claim 1 of auxiliary request 3 involves an inventive step in view of E1a as the closest prior art for the following reasons.

- 4.4.5 E1a clearly teaches that the purpose of a fatty acid such as stearic acid is to form CO₂ by reacting with a bicarbonate (see in particular page 4, from line 10 onwards). E1a thus fails to give any indication that fatty acids might also serve as surface modifiers for inorganic particles, let alone to use the first compound according to claim 1 in order to coat the inorganic particles.

While E7 uncontestedly discloses inorganic particles coated with a compound as called for in claim 1, it deals with coated inorganic particles having a specific coupling surface modifier for improving the inorganic particles' compatibility in a polymeric matrix. The reasons for using the fatty acid in E1a and using the surface modifier in E7 are thus different.

Moreover, while E1a relates to a method for making a composite foam extruded product which simulates lumber, E7 is directed to the use of specific coupling surface modifiers for coating inorganic particles and thus improving those particles' compatibility in a polymeric matrix in order to achieve better mechanical properties (see page 1, from line 5 onwards); E7 does not refer to any such products. Therefore, E1a and E7 relate to substantially different applications and may even be considered to relate to different technical fields.

In view of the above, the board concludes that a skilled person would not take E7 into consideration when trying to find an alternative solution to the objective technical problem to be solved.

4.4.6 It follows that the process of claim 1 of auxiliary request 3, i.e. the only claim objected to by the respondent, involves an inventive step over E1a as the closest prior art. For the sake of completeness, the board observes that the same applies to independent process claims 2 and 3.

5. Since auxiliary request 3 is allowable, there is no need to deal with auxiliary requests 4 to 11.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the following documents:
 - claims 1 to 14 of auxiliary request 3,
 - a description to be adapted accordingly and
 - Figures 1 to 5 of the patent specification.

The Registrar:

The Chairman:



A. Nielsen-Hannerup

A. Haderlein

Decision electronically authenticated