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**Datasheet for the decision
of 11 February 2019**

Case Number: T 2244/16 - 3.3.05

Application Number: 11009801.9

Publication Number: 2465986

IPC: D04H1/64, C08B37/00, C08L5/00,
C03C25/32, D04H3/12

Language of the proceedings: EN

Title of invention:
Nonwoven of synthetic polymer with binder comprising salt of
inorganic acid

Patent Proprietor:
Johns Manville

Opponent:
Knauf Insulation

Headword:
Nonwoven with binder/Johns Manville

Relevant legal provisions:
EPC Art. 123(2), 123(3), 84, 83, 54, 56

Keyword:

Amendments - allowable (yes)

Claims - lack of clarity no ground for opposition

Sufficiency of disclosure - (yes)

Novelty - (yes)

Inventive step - (yes)

Decisions cited:

G 0003/14, T 0210/05

Catchword:



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Case Number: T 2244/16 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 11 February 2019

Appellant: Knauf Insulation
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
23 August 2016 concerning maintenance of the
European Patent No. 2465986 in amended form.**

Composition of the Board:

Chairman E. Bendl
Members: G. Glod
S. Fernández de Córdoba

Summary of Facts and Submissions

I. The present appeal from the opponent (appellant) lies from the decision of the opposition division finding that the amended European patent No. 2 465 986 B1 based on the then first auxiliary request met the requirements of the EPC.

The following documents cited in the decision are of relevance for the present decision.

D1: EP 2 223 941 A1
D3: DE 10 2004 033 561 A1
O1: EP 2 386 605 A1
O2: EP 2 386 394 A1
O4: EP 1 652 868 A1
O5: WO 2011 022227 A1
O6: WO 2010 108999 A1
O7: US 3 006 879 A
O9: US 3 513 001 A
O10: US 7 265 169 A

II. With its reply to the grounds of appeal dated 12 April 2017, the respondent (patent proprietor) submitted, in addition to the set of claims held allowable by the opposition division, two auxiliary requests.

III. In its communication under Article 15(1) RPBA, the board was of the preliminary opinion that the main request was not allowable under Article 83 EPC while auxiliary request 1 seemed to fulfil the requirements of the EPC.

IV. By letter of 24 January 2019, the appellant withdrew its request for oral proceedings and announced that it would not attend the scheduled oral proceedings.

- V. Oral proceedings took place on 11 February 2019 in the absence of the appellant. During these proceedings, the respondent withdrew its main request and made auxiliary request 1 its sole request.

The independent claims of the request are as follows:

"1. A spunbond polyester mat comprising a binder comprised of a reaction product of an aldehyde with an amine salt of an inorganic acid wherein the amine is a di- or multifunctional primary or secondary amine and the aldehyde is a reducing sugar and the aldehyde is used with the salt."

"9. A process for preparing the spunbound polyester mat of claim 1, comprising coating the polyester fibers or continuous filaments with a binder composition comprising a reaction product of an aldehyde with an amine salt of an inorganic acid, wherein the amine is a di- or multifunctional primary or secondary amine and the aldehyde is a reducing sugar and the aldehyde is used with the salt."

"18. Use of the spunbond polyester mat of claim 1 for producing filters, battery separators or roofing membranes."

Claims 2 to 8 and 10 to 17 describe preferred embodiments of the spunbond polyester mat according to claim 1, respectively the process according to claim 9.

- VI. The arguments of the appellant can be summarised as follows:

The description and the claims would not have taught the skilled person what was required to make the invention work over the whole scope claimed. In particular, claim 1 covered compositions that were not curable. No guidance was given on the minimum and maximum ratio between amine salt and carbohydrate. Claim 9 could not be reproduced since it required the application of the reaction product onto the polyester fibres.

O1 disclosed aqueous binder compositions for use as curable binders for binding spunbond polyester fibres. The only selection that had to be made to arrive at the subject-matter claimed was among the accelerators/catalysts. Claim 1 included not only continuous filaments but any polyester fibres. This also applied to O2.

O5 disclosed in example 4 a nonwoven fibre web that actually was a spunbond fibre web. The binder of O5 was identical to the binder claimed.

It was far from plausible that the objective problem had been solved when starting from D1 or D3 as closest prior art, so these documents remained relevant for inventive step. The problem the alleged invention sought to solve was not solved over the whole range claimed.

Starting from O4, the selection of spunbond polyester fibres as a substrate cannot be seen as inventive.

O7 was a good starting point because it related exactly to the same technological area, that being the provision of suitable binders for bonding nonwoven polymeric fibre webs. Knowing also from O6 that

reducing sugars did react with amine functions to provide good binders, the skilled person would have replaced the formaldehyde of O7 with reducing sugars. Knowing from O9 that good binders could be obtained, it would have been obvious for the skilled person to modify the teaching of O7 accordingly. This was further supported by O10.

VII. The respondent refuted the arguments and indicated that O1 and O2 disclosed neither a spunbond polyester mat nor a reaction product of an aldehyde that was a reducing sugar and an amine salt of an inorganic acid. O5 did not disclose spunbond polyester mats.

D1 and D3 did not provide any motivation to use an amine salt of an inorganic acid in which the amine was as defined in claim 1. O4 did not teach to have a reaction product of an aldehyde as a reducing sugar and an amine salt of an inorganic acid. O7 was silent about any spunbonded polyester mat and did not relate to reducing sugar. O6 did not mention an amine salt of an inorganic acid. O9 did not relate to spunbonded polyester mats.

VIII. The appellant requests that the impugned decision be set aside and that the patent be revoked.

The respondent requests that the impugned decision be set aside and that the patent be maintained on the basis of the sole request submitted as auxiliary request 1 with the reply to the grounds of appeal.

Reasons for the Decision

1. Article 123(2) and (3) EPC

The objections raised in the statement of grounds of appeal (point 3.2) are not relevant any more since "ketone" was deleted from claim 9. The board is satisfied that the amendments made to the granted claims do not give rise to objections under Article 123(2) and (3) EPC.

2. Article 84 EPC

Claim 1 is based on claims 1, 7 and 8 as granted while claim 9 is based on claim 11 as granted with the corresponding amendments. Therefore, the claims are not open to an objection under Article 84 EPC (G 03/14, Reasons 81).

3. Article 83 EPC

The requirements of Article 83 EPC are fulfilled for the following reasons.

Claim 1 relates to a spunbond polyester mat comprising a binder comprising a reaction product as defined. The patent contains sufficient information about the types of amines (paragraph [0018]), acid (paragraph [0015]) and reducing sugar (paragraph [0020]) that can be used. The ratio of acid to carbonyl is provided in paragraph [0022]. The curing of the binder is described in paragraph [0026].

Claim 9 is formulated ambiguously since it is understood that the reaction product (and not the curable composition) is added to the polyester fibres.

This formulation constitutes a problem under Article 84 EPC rather than Article 83 EPC. Since it was already present in the patent as granted, it is not open to an objection under Article 84 EPC (see point 2 above). Claim 9 has to be interpreted in accordance with the description, in which paragraphs [0025] and [0026] explain how the binder composition is to be applied to the spunbond polyester filaments. It is further illustrated by example 4.

Therefore, there is no reason for not following the opposition division's opinion on Article 83 EPC since the appellant has not provided any evidence, only speculation, that the information provided in the patent does not allow providing the claimed spunbond polyester mat. There is also not any proof that it was an undue burden to find the components that allow producing the desired reaction product when taking into consideration the teaching of the patent.

4. Article 54 EPC

The requirements of Article 54 EPC are met for the following reasons.

- 4.1 Even if it was accepted that polyester spunbonded roof shingles were disclosed in O1, this would be one of many different uses listed in paragraph [0060]. An inorganic acid (phosphinic acid) would still have to be chosen from the list in paragraph [0015]. In addition, O1 does not disclose that an amine salt of an inorganic acid is formed since there is no disclosure that the accelerator or esterification catalyst would react with the amine to get an amine salt. Furthermore, there is no disclosure that an amine salt reacts with an aldehyde in the form of a reducing sugar.

- 4.2 The same applies to O2.
- 4.3 Example 4 of O5 discloses spunbond mats comprising the same binder as the present invention, but it is not directly and unambiguously derivable from O5 that the polymer in that case was polyester. Although polyester is disclosed as one possibility on page 3, line 28, an example constitutes a specific embodiment that cannot be combined with other information of the description (T 210/05, Reasons 2.3).
5. Article 56 EPC
- 5.1 The invention relates to spunbond polyester mats.
- 5.2 It is established case law that the closest prior art is normally a prior-art document disclosing the same purpose or aiming at the same objective as the claimed invention and having the most features in common with the claimed subject-matter. D1 is considered the closest prior art since it discloses a formaldehyde-free binder comprising hydroxylamine and dextrose on glass microfibre filter paper sheets (Table 6, comparative example C2), but it does not disclose such a binder on spunbond polyester mats.
- O4 relates to formaldehyde-free binders suitable for polyester fibres (paragraphs [0002], [0003] and [0024]), but the binder used is more remote from the binder used in the present invention than the binder of D1.
- 5.3 The problem to be solved with respect to D1 is the provision of an alternative spunbond polyester mat.

- 5.4 The solution proposed is a spunbond polyester mat according to claim 1 characterised in that the binder is a reaction product of reducing sugar with an amine salt of an inorganic acid.
- 5.5 The solution is not obvious for the following reasons.
- 5.5.1 Spunbond polyester mats are disclosed in D1 (Table 10), but D1 only teaches ammonium salts of an inorganic acid in combination with dextrose as part of the binder composition (see claim 1 and Table 10). Although hydroxylamine hydrochloride in combination with dextrose is explicitly disclosed in D1, it is only disclosed as a comparative example and with glass paper filter. It is not taught as an alternative to the claimed compositions of D1, and it is not used for spunbond polyester mats.
- 5.5.2 D3 is silent about spunbond polyester mats and does not disclose an amine salt of an inorganic acid.
- 5.5.3 O4 relates to the condensation of melamine with an aldehyde, which is then reacted with glyoxylic acid and a polyol such as dextrose. This resin is then applied to the substrate in the presence of a catalyst such as phosphoric acid (paragraph [0025]). O4 does not teach the reaction of a reducing sugar with an amine salt of an inorganic acid.
- 5.5.4 O6 does not disclose the reaction of a reducing sugar with an amine salt of an inorganic acid.
- 5.5.5 O7 does not relate to reducing sugar or a formaldehyde-free binder.

- 5.5.6 O9 does not relate to spunbond polyester mats and does not provide a pointer towards an amine salt of an inorganic acid when reacted with a reducing sugar since none of the examples are conducted with such a composition.
- 5.5.7 O10 does also not relate to spunbond polyester mats.
- 5.6 Since claims 2 to 18 directly or indirectly refer back to claim 1, the same argumentation applies to these claims.
- 5.7 Consequently, the requirements of Article 56 EPC are met.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the sole request, submitted as auxiliary request 1 with the reply to the grounds of appeal, and a description to be adapted thereto.

The Registrar:

The Chairman:



A. Pinna

E. Bendl

Decision electronically authenticated