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Datasheet for the decision of 12 February 2019

Case Number: T 2286/16 - 3.3.05

Application Number: 10742068.9

Publication Number: 2467519

IPC: D04H1/587, D04H3/12, D04H1/64, C08B37/00, C08L5/00, C03C25/32

Language of the proceedings: EN

Title of invention:
CURABLE BINDER COMPRISING AMINE SALT OF INORGANIC ACID

Patent Proprietor:
Johns Manville

Opponent:
Knauf Insulation

Headword:
Curable binder/Johns Manville

Relevant legal provisions:
EPC Art. 83, 54, 56

Keyword:
Sufficiency of disclosure - (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 2286/16 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 12 February 2019

Appellant: (Opponent)	Knauf Insulation Rue de Maastricht 95 4600 Visé (BE)
Representative:	ARC-IP ARC-IP sprl Rue Emile Francqui 4 1435 Mont-Saint-Guibert (BE)
Respondent: (Patent Proprietor)	Johns Manville 717 Seventeenth Street Denver, CO 80202 (US)
Representative:	Mai Dörr Besier European Patent Attorneys European Trademark Attorneys Patentanwälte Kreuzberger Ring 64 65205 Wiesbaden (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 10 August 2016 concerning the maintenance of European Patent No. 2467519 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 by the **opponent (appellant)** lies from the decision of the opposition division finding that the then second auxiliary request met the requirements of the EPC.

The only independent claim of that request reads as follows:

"*1. A non-woven web of polymeric fibers 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*".

Claims 2 to 12 refer to preferred embodiments.

II. The following documents cited in the impugned decision are of relevance here:

D1: EP 1 510 607 A1
D3: EP 2 223 941 A1
O5: US 3 006 879 A
O6: WO 2007 014 236 A2
O9: US 3 513 001 A
O10: US 7 265 169 B2
O14: US 1 801 053 A

III. In its communication pursuant to Article 15(1) RPBA, the board was of the preliminary opinion that the appeal was likely to be dismissed.

IV. By letter dated 24 January 2019, the appellant withdrew its request for oral proceedings and informed the board

that it would not attend the oral proceedings scheduled for 14 February 2019.

V. Oral proceedings were cancelled on 5 February 2019.

VI. The appellant's arguments can be summarised as follows:

The requirements of Article 83 EPC were not met, since the skilled person did not have the required information to reproduce the curable composition over the whole range.

D1 and D3 remained relevant to the question of whether the claims involved an inventive step.

O5 was a good starting point because it related to exactly the same technological area, namely the provision of suitable binders for bonding non-woven polymeric fiber webs. In O5 a binder was generated from melamine and formaldehyde and strong mineral acid. The skilled person knew from O6 that reducing sugars reacted with amine functions to provide good binders, so would have replaced the formaldehyde of O5 with reducing sugars. The skilled person knew from O9 that good binders might be obtained, so it was obvious to modify the teaching of O5 accordingly. This was further supported by the disclosure of O10 and O14.

The respondent's (patent proprietor's) arguments can be summarised as follows:

The patent contained detailed information on the amount of cured binder and on the molar ratio of aldehyde to amine salt.

No reasons were provided to explain why D1 and D3 remained relevant. O5 did not disclose any aldehyde as reducing sugar, nor did it disclose that the reducing sugar was used with the salt, wherein the salt was an amine salt of an inorganic acid and the amine was a di- or multifunctional primary or secondary amine. O6 did not involve an amine salt as present in claim 1. O5 and O6 did not provide any technical teaching for improving the tensile elongation at elevated temperatures. O9 did not teach any binding of non-woven webs of polymeric fibers. O10 and O14 did not disclose an amine in the form of a salt of an inorganic acid.

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

The respondent requests that the appeal be dismissed.

Reasons for the Decision

1. Article 83 EPC

The board concurs with the opposition division's position for the following reasons:

Claim 1 relates to a non-woven web of polymeric fibers comprising a binder comprising a reaction product as defined. The patent contains information about the types of amines, acid and reducing sugar that are to be used, the molar ratio of acid functionality to amine functionality and the molar ratio of acid in the amino-amide or ammonium salt intermediate to carbonyl (paragraphs [0019] to [0023] and [0025]) that is sufficient to obtain the desired curing composition.

The curing conditions of the binder are described in paragraph [0028].

As already indicated in the impugned decision (point 13) the appellant has not provided any evidence, but has merely speculated, that the information given in the patent, in particular the molar ratios mentioned there, does not allow the claimed non-woven web of polymeric fibers to be obtained. Nor is there any proof that it was an undue burden to identify those components that allow the desired reaction product to be produced.

2. Article 54 EPC

The appellant no longer contests the novelty; the board sees no reason to take a different stance.

3. Article 56 EPC

The requirements of Article 56 EPC are fulfilled for the following reasons:

3.1 The present invention relates to polymeric fiber webs.

3.2 O5 is considered the closest prior art, since it discloses binders for bonded non-woven viscose rayon fabrics (column 9, lines 17 and 18). The binders are chosen from urea-formaldehyde or melamine-formaldehyde condensation products (column 9, line 72 to column 10, line 12).

3.3 The problem to be solved according to the patent in suit, is to provide a non-woven polymeric fiber web comprising a formaldehyde-free binder (paragraphs

[0001] and [0030] and respondent's submission of 13 April 2017, page 6, penultimate paragraph).

3.4 The proposed solution is a non-woven web according to claim 1 characterised in that the binder comprises a reaction product of a reducing sugar with an amine salt of an inorganic acid.

3.5 The board is not convinced that this problem has been solved over the entire scope claimed, as the terms "comprising" and "comprised of" leave it open whether additional compounds, such as ingredients containing formaldehyde, are present in the binder and/or the polymeric fibers.

3.6 Therefore, the problem has to be re-defined in a less ambitious way as the provision of a non-woven web that provides an alternative to the one described in the closest prior art.

3.7 The solution is considered not to be obvious, for the following reasons:

O5 does not mention the reaction product indicated in claim 1.

O6 does not disclose such a reaction product either. It discloses Maillard reactants including an amine and a reducing sugar as binder (claims 1 and 5). Suitable amines are indicated in Figure 1 and do not include an amine salt of an inorganic acid. The preferred binders shown in Table 7 are not the reaction products that are part of the claimed non-woven web. It is not apparent why the skilled person would only choose the sugar from the Maillard reactants and use it instead of formaldehyde in O5. Even if this were done, O5 would

still lack the amine salt of an inorganic acid. To obtain this, melamine would have to be reacted with an inorganic acid prior to reaction with the reducing sugar. Nothing in O6 or O5 hints at an amine salt of inorganic acid. O6 simply provides a solution different from the claimed one. The appellant's argument that the solution was obvious in view of O5 in combination with O6 is based on hindsight.

O9 discloses the use of di- or polyamines in the form of a salt of an inorganic acid (column 2, lines 59 to 62) for reacting with dextrose monohydrate (claim 1), but it does not provide any indication that these binders would be suitable for polymeric fibers.

O10 does not relate to polymeric fibers either. Furthermore, O10 does not disclose an amine in the form of a salt of an inorganic acid, nor the reaction of such a compound with a reducing sugar.

Although O14 may be considered to disclose a binder for fibrous ingredients (page 1, line 86-93), it does not disclose an amine salt of an inorganic acid.

The appellant did not provide any reasons why D1 and D3 were still considered relevant for the question of inventive step, so this objection is not substantiated. It is also not immediately apparent why D1 or D3 should be a better starting point than O5.

3.8 The solution to the posed problem is not obvious, so the subject-matter of claim 1 and of claims 2 to 12 depending directly or indirectly therefrom, involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

C. Vodz E. Bendl

Decision electronically authenticated