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D E C I S I O N
of 27 June 2001

Case Number: T 1012/98 - 3.3.3

Application Number: 95913801.7

Publication Number: 0751973

IPC: C08J 5/18

Language of the proceedings: EN

Title of invention:
Repulpable plastic films

Applicant:
Minnesota Mining and Manufacturing Company

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 84

Keyword:
"Clarity (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1012/98 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 27 June 2001

Appellant: Minnesota Mining and Manufacturing Company
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Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 1 April 1998, issued in writing on 13 May 1998 refusing European patent application No. 95 913 801.7 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: R. Young
Members: C. Idez
J. De Preter

Summary of Facts and Submissions

I. European patent application No. 95 913 801.7, based on International patent application PCT/US95/03549, filed on 21 March 1995 claiming the priority of the earlier US patent application No. 238 226 of 4 May 1994, and published under No. WO 95/30523 (EP-A-0 751 973) on 16 November 1995, was refused by a decision of the Examining Division announced orally on 1 April 1998 and issued in writing on 13 May 1998.

II. The decision was based on a set of 13 claims of a main request and on a set of 13 claims of an auxiliary request, both submitted at the oral proceedings held on 1 April 1998. Claim 1 of the main request read as follows:

"Suspension polymerized, film-forming, non-tacky, solvent and water insoluble or infusible, plastic, polymeric microspheres having a diameter of at least 1 µm, a T_g, T_m or softening point of greater than 20°C and formed from free radically polymerizable monomers."

Independent Claim 2 read as follows:

"A water dispersible film comprising:

(a) 5 to 95 parts by weight of a water soluble film forming polymer, and

(b) 5 to 100 parts by weight of a non-tacky, water and solvent insoluble or infusible, film-forming, polymeric microsphere having a diameter of at least 1 µm formed from free radically polymerizable monomers."

Dependent Claims 3 to 7 referred to preferred embodiments of the microspheres according to Claim 1 and/or used in the film of Claim 2.

Dependent Claims 8 to 12 dealt with preferred features of the film according to Claim 2. Independent Claim 13 read as follows:

"A method for making a water dispersible film comprising the steps of:

(a) forming an oil, or water-in-oil, -in water emulsion, wherein the continuous aqueous phase comprises a solution of a water soluble film forming polymer and the oil phase, or water-in-oil phase, comprises a free radical initiator, free radically polymerizable monomers, crosslinking monomer and optionally polar monomer, or hydrophilizing agents, wherein the oil, or water-in-oil, droplets have an average diameter of greater than 1 µm,

(b) polymerizing the free radically reactive monomer(s), to form a dispersion of microspheres in the aqueous phase,

(c) casting or coating the dispersion into a film form,

(d) drying to form a solid water dispersible film having a thickness of less than 300 µm and comprising 0 to 45 parts of the water soluble film-forming polymer and 5 to 100 parts of non-tacky, water and solvent insoluble or infusible, film-forming polymeric microspheres having a

diameter of at least 1 µm".

Claim 1 of the auxiliary request read as follows:

"Suspension polymerized, film-forming, non-tacky, solvent and water insoluble or infusible, plastic, polymeric microspheres having a diameter of at least 1 µm, wherein the microspheres comprise the polymerization reaction product by weight of:

(a) 70 to 100 parts of free radically polymerized monomers polymerizable to a polymer having a T_g, T_m or softening point of at least 10°C,

(b) 0 to 5 parts of a polar monomer copolymerizable with the monomer of element (a),

(c) 0 to 25 parts of a hydrophilizing agent, and

(d) 0.01 to 10 equivalent weight percent of a crosslinking agent based on the total polymerizable composition."

Independent Claim 2 and dependent Claims 8 to 12 were respectively the same as Claims 2, 8 to 12 of the main request. Dependent Claims 3 to 4 referred to preferred features of the microspheres used in the film of Claim 2. Dependent Claims 5 to 7 dealt with specific embodiments of the microspheres according to Claim 1 or used in the film according to Claim 2. Independent Claim 13 exactly corresponded to Claim 13 of the main request.

III. The Examining Division refused the application on the grounds that it did not meet the requirements of

Article 84 EPC. The Examining Division came to the conclusion that the claims were unclear due to the expression "solvent insoluble" in Claims 1, 2 and 13 and due to the term "non-tacky" in Claims 1 to 5 and 13 of both the main and the auxiliary requests.

More precisely, the decision held that it was not clear whether the feature "solvent-insoluble" required that the polymer should be insoluble in one solvent or in each and every solvent.

The Examining Division considered the term "non-tacky" as a relative one, since there was no clear cut boundary between tacky and non-tacky. The question of clarity concerning the term "non-tacky" arose due to the fact that the Applicant had tried to use this term in order to establish novelty over D5 (WO-A-94/13751). This term was thus an essential feature of the claims and rendered them unclear because it had no well defined meaning. The Examining Division did not accept the argument of the Applicant that non-tacky meant no measurable tack and further stated that some sort of measurable tack must exist between the non-tacky microspheres, since they formed a self-supporting film.

IV. A Notice of Appeal against the decision was lodged on 23 July 1998 by the Applicant with simultaneous payment of the prescribed fee and the Statement of Grounds of Appeal was filed on 23 September 1998.

V. In an annex to the summons to oral proceedings dated 25 January 2001, the Appellant was informed, *inter alia*, about a number of essential questions to be discussed:

(i) Concerning the feature "solvent insoluble": It was not clear whether this feature required that the polymeric microspheres must be insoluble in one solvent or in each and every solvent. The argument of the Appellant that the microspheres should be stable under the conditions in which they were used did not seem to be pertinent, since these conditions were not defined in the claims.

(ii) Concerning the term "non-tacky": The Appellant had argued that the property non-tacky was a measurable one but the application did not contain any information about the method and conditions to be used for determining this property.

(iii) Further objections under Article 84 EPC were raised in view of the wording "water insoluble" in Claims 1, 2 and 13 than on file and in view of the terms "hydrophilizing agent" and "crosslinking agent" in Claims 3, 5, 6 and 7 then on file.

VI. With its response dated 1 June 2001, the Appellant filed a set of 13 claims as new main request and seven sets of 12 claims forming respectively seven auxiliary requests.

VII. At the oral proceedings held on 27 June 2001, the Appellant submitted a set of 6 claims as new main request.

Claim 1 of this request reads as follows:

"A repulpable, water dispersible film comprising:

(a) 0 to 95 parts by weight of a water soluble film forming polymer, and

(b) 5 to 100 parts by weight of suspension polymerized, film-forming, non-tacky, solvent and water insoluble, plastic, polymeric microspheres having a diameter of at least 1 µm, formed from free radically polymerizable monomers, whereby the microspheres are solvent and water insoluble under the conditions of repulping techniques in water near room temperature and at neutral pH and are non-tacky near room temperature."

Dependent Claims 2 and 3 refer to specific features of the microspheres used in the film according to Claim 1, while dependent Claims 4 to 5 deal with preferred embodiments of the water soluble polymer used in the film according to Claims 1 to 3.

Independent Claim 6 reads as follows:

"A method for making a repulpable, water dispersible film comprising the steps of:

(i) forming an oil, or water-in-oil, -in water emulsion, wherein the continuous aqueous phase optionally comprises a solution of a water soluble, film-forming polymer and the oil phase, or water-in-oil phase, comprises a free radical initiator, free radically polymerizable monomers, crosslinking monomer and optionally polar monomer, or hydrophilizing agents, wherein the oil, or water-in-oil, droplets have an

average diameter of greater than 1 µm,

(ii) polymerizing the free radically reactive monomers, to form a dispersion of microspheres in the aqueous phase,

(iii) casting or coating the dispersion into a film form,

(iv) drying to form a solid, water dispersible film having a thickness of less than 300 µm and comprising 0 to 95 parts of the water soluble, film-forming polymer and 5 to 100 parts of microspheres as defined in any of claims 1 to 3."

VIII. The arguments presented by the Appellant in the Statement of Grounds of Appeal and during the oral proceedings may be summarized as follows:

(i) Concerning the terms "solvent insoluble" and "water insoluble": it was clear in view of the paragraph on page 14, lines 8 to 15 of the application, that these terms defined microspheres which were stable under the conditions in which the microspheres were used.

(ii) Concerning the term "non-tacky":

(ii.1) Non-tacky only meant that there was no bond of measurable strength immediately upon contact with another surface. The absence of tack was an objective feature and not a relative one and did not depend on the judgement of the observer.

(ii.2) Since this term in fact referred to the absence of a property (tackiness), there was no need to indicate a method of measurement.

(ii.3) Contrary to the statements in the decision under appeal, and as evidenced by the Ullmann's Encyclopedia of Industrial Chemistry (page 170), tackiness had nothing to do with film-forming properties.

IX. The Appellant requested that the decision under appeal be set aside and that the case be remitted to the first instance for further prosecution on the basis of the set of Claims 1 to 6 filed during the oral proceedings (i.e. the new main request).

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Amendments*

2.1 Claim 1 differs from independent Claim 2 as originally filed by the indications (a) that the film is repulpable, (b) that the microspheres have been suspension polymerized and are plastic, (c) that the amounts of water soluble polymer and of microspheres are given in parts by weight, and (d) that the microspheres are solvent and water insoluble under the conditions of repulping techniques in water near room temperature and at neutral pH and non-tacky near room

temperature.

2.2 Support for amendment (a) is to be found in particular on page 1, title and lines 7 to 19 and on page 2, lines 26 to 33 of the application as originally filed, while amendment (b) is supported by original Claim 1 in combination with lines 1 to 5 on page 12 of the application as originally filed.

2.3 The passage from line 32 on page 3 to line 1 on page 4 of the application as originally filed provides support for amendment (c).

2.4 Amendment (d) is supported by lines 8 to 15 on page 14 of the application as originally filed.

2.5 Dependent Claims 2, 3, 4, and 5 are respectively supported by original Claims 11, 12, 8 and 9.

2.6 Independent Claim 6 is supported by original Claim 13, by lines 22 to 25 on page 13, by the passage from line 32 on page 3 to line 1 on page 4 and by lines 25 to 33 on page 11 of the application as originally filed.

2.7 Thus, Claims 1 to 6 of the main request meet the requirements of Article 123(2) EPC.

3. *Clarity*

3.1 The terms "solvent insoluble" and "non-tacky", the presence of which in the set of claims of both the main and the auxiliary requests, on which the decision under appeal was based, led to the refusal of the application are still present in Claim 1.

3.2 The argument that it was not clear whether the feature "solvent-insoluble" required that the polymer used for the manufacture of the microspheres should be insoluble in one solvent or in each and every solvent, is no longer valid, since Claim 1 now requires that the microspheres should be insoluble in the aqueous medium (i.e. comprising solvent(s)) used in the repulping technique near room temperature. Thus, no lack of clarity arises now from the term "solvent insoluble". One arrives at the same conclusion concerning the term "water insoluble", since this property is now defined in Claim 1 at the conditions of the repulping technique near room temperature and at neutral pH.

3.3 As indicated in the description of the application, the microspheres may gain some tackiness when heated (cf. page 14, lines 12 to 13). Thus, whether or not the microspheres will be considered as "non-tacky" clearly depends on the temperature at which the tackiness is checked. This is now reflected in Claim 1, which specifies that the microspheres are non-tacky near room temperature.

3.4 The other question to be considered is whether the indication of a method of measurement is necessary for the complete definition of the feature "non-tacky".

3.5 According to the document "Encyclopedia of Polymer Science and Engineering, Volume 13, page 357" submitted by the Appellant with the Statement of Grounds of Appeal, "tack" is defined as the "property of a material which enables it to form a bond of measurable strength immediately upon contact with another surface". Hence, the term "non-tacky" is to be understood by the person skilled in the art as the

absence of a bond of measurable strength. Thus, in the present case, it is the absence of tack and not its quantification, which is relevant for the definition of the claimed subject-matter.

3.6 Where a quality is expressed in a claim as being within a numerical range, the method for measuring that quality must be either general knowledge, so that no explicit description is needed or a method for measuring it needs to be identified, but where, as in the application in suit, the claim specifies that a quality must be absent, this implies that this quality cannot be detected by the methods which are common in the art for measuring it, so that the indication of a specific method is not necessary.

3.7 The argument of the Examining Division, that some sort of measurable tack must be present between the microspheres, otherwise they could not form a film, is not pertinent, since "tackiness" and "film forming property" are two independent properties as evidenced by the document "Ullmann's Encyclopedia of Industrial Chemistry, page 170" submitted by the Appellant with the Statement of Grounds of Appeal.

3.8 Consequently, no unclarity arises from the term "non-tacky" in Claim 1 of the application in suit.

3.9 Although some compounds listed as hydrophilizing agents (e.g. poly(ethylene oxide)) diacrylate or dimethacrylate in the description may also work as crosslinking agents, the considerations made, in the communication of 25 January 2001, in view of Claims 3, 5, 6 and 7 then on file do not apply to Claim 6, since Claim 6, on the one hand, merely refers to the use of a

hydrophilizing agent as starting component as an optional feature, and, on the other hand, does not define respective amounts of crosslinking agent and hydrophilizing agent.

3.10 Thus, the Board is satisfied that Claims 1 to 6 meet the requirements of Article 84 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance for further prosecution on the basis of Claims 1 to 6 filed during the oral proceedings.

The Registrar: The Chairman:

E. Görgmaier R. Young