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Anmeldenummer / Filing No / N^o de la demande : 79 103 446.5

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Bezeichnung der Erfindung:

Title of invention: Vinylidene chloride polymer microgels and use
Titre de l'invention : thereof for the preparation of coatings.

Klassifikation / Classification / Classement : CO8F

ENTSCHEIDUNG / DECISION
vom / of / du 4 November 1985

Anmelder / Applicant / Demandeur : The Dow Chemical Company

Patentinhaber / Proprietor of the patent /
~~Titulaire du brevet :~~

~~Einsprechender / Opponent / Oppesant :~~

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Articles 54; 111(1)
"Novelty" "Remittal of the case"

Leitsatz / Headnote / Sommaire

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Case Number: T 72 / 83

DECISION
of the Technical Board of Appeal 3.3.1
of 4 November 1985

Appellant: The Dow Chemical Company
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Decision under appeal: Decision of Examining Division 011 of the European Patent
Office dated 5 October 1982 refusing European patent
application No 79 103 446.5 pursuant to Article 97(1)
EPC

Composition of the Board:

Chairman: K. Jahn

Member: P. Lançon

Member: O. Bossung

Summary of facts and submissions

- I. European patent application 79 103 446.5 filed on 14 September 1979 and published on 2 April 1980 with publication number 9221 claiming the priority of the prior application of 15 September 1978 (US 942 515) was refused by decision of the Examining Division 011 of the European Patent Office dated 5 October 1982.

The decision was based on Claims 1 to 10 received on 15 October 1981. Claim 1 was worded as follows:

1. Discrete, cross-linked polymer microgels obtained by emulsion polymerizing (a) 50 to 95 parts by weight of vinylidene chloride, (b) 5 to 50 parts by weight of a copolymerizable ethylenically unsaturated comonomer, and (c) 0.1 to 10 parts by weight of a cross-linking comonomer with polyfunctional unsaturated copolymerizable groups and characterised by having a latex particle size of less than one μm and a gel content of 25 to 99 per cent.

- II. The reason given for the refusal referred to lack of novelty as far as Claim 1 is concerned.

It was held that FR-A-2 040 326 cited in the Search Report disclosed compositions within the scope of Claim 1. It was further stated that Claims 2-10 were open to objection under Article 56 EPC.

- III. On 12 November 1982 the Appellant lodged an appeal against the decision. The appeal fee was duly paid. A statement of grounds of the appeal was submitted on 14 July 1983, after the expiry of the time limit on 15 February 1983.

The Appellant's representative requested the reestablishment of rights under Article 122 EPC in respect of the unobserved time limit . By decision of 21 December 1983, the Board restored the Appellant in his rights. With the statement of grounds the Appellant replaced the refused Claims 1 to 10 by new Claims 1 to 6. The new Claim 1 reads as follows:

1. Discrete, cross-linked polymer microgels obtained by emulsion polymerizing (a) vinylidene chloride, (b) a copolymerizable ethylenically unsaturated comonomer, and (c) a cross-linking comonomer with polyfunctional unsaturated copolymerizable groups, characterized by 1) having a latex particle size of less than one μm and a gel content of 25 to 99 per cent, 2) having a second order transition temperature of at least 30°C and 3) being obtained by emulsion polymerizing 50 to 90 parts by weight of vinylidene chloride with 10 to 50 parts by weight of an alkyl ester of acrylic or methacrylic acid, a nitrile of an ethylenically unsaturated carboxylic acid or methacrylic acid and 1 to 10 parts by weight of said cross-linking comonomer.
- IV. The Appellant submits that the subject matter of each of the new claims is novel and, therefore, requests that the decision be set aside and the patent be granted on the basis of the new claims.

Reasons for the decision

1. After reestablishment of rights pursuant to the Board's decision of 21 December 1983, the appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. There is no formal objection to the current version of the claims since it is adequately supported by the original disclosure. Claim 1 is based on a combination of the subject-matter of original Claims 1 and 2. Admissible clarification of the claim has been made by replacement of the phrase "copolymerizable cross-linking polyfunctional comonomer" by "cross-linking comonomer with polyfunctional unsaturated copolymerizable groups" (see component (c)).

New Claims 2 to 6 correspond with original Claims 3 to 7.

3. The European patent application in suit is concerned with discrete, cross-linked polymer microgels obtained by emulsion polymerizing

(a) vinylidene chloride;

(b) a copolymerizable ethylenically unsaturated comonomer;
and

(c) a cross-linking comonomer with polyfunctional
unsaturated copolymerizable groups,

as specified in the precharacterizing portion of Claim 1.

These microgels are characterised by four features:

(1) a latex particle size of less than one μm ;

(1a) a gel content of 25 to 99 per cent;

(2) a second order transition temperature of at least
30°C;

.../...

- (3) the microgels are obtained by emulsion polymerizing 50 to 90 parts by weight of a vinylidene chloride (ingredient a) with 10 to 50 parts by weight of an alkyl ester of acrylic or methacrylic acid, a nitrile of an ethylenically unsaturated carboxylic acid or methacrylic acid (ingredient b) and 1 to 10 parts by weight of said cross-linking comonomer (ingredient c).

These microgels are presented as being effective as additives for synthetic foams and fibers and for the preparation of improved coatings, films and redispersible latexes (See page 1, lines 3 to 7).

4. The closest prior art, FR-A-2 040 326, also pertains to a latex composition useful for the coating of substrates (see description page 1, lines 1 to 4.

This document discloses discrete cross-linked polymer microgels obtained by polymerizing

- (A) 70 to 95% by weight of vinylidene chloride;
- (B) 0.1 to 3% by weight of an ethylenically unsaturated hexavalent sulphur based acid;
- (C) 0 to 5% by weight of ethylenically unsaturated carboxylic acid; and
- (D) 2 to 29.9% by weight of an ethylenically unsaturated monomer, different from A, B or C, (see description, page 1, lines 5 to 11).

If desired, up to 2% by weight of the monomers used in the process are copolymerizable diethylenically unsaturated comonomers hereinafter referred to as (E) for convenience); see description, page 8, lines 10 to 18.

Exemplary ethylenically unsaturated carboxylic acids (compound C) are mentioned in the description. Among them is methacrylic acid (see page 7, lines 10 to 13). Examples of compound (D) are also given in the description. They include the alkyl esters of ethylenically unsaturated carboxylic acids such as methylacrylate or methylmethacrylate as well as the ethylenically unsaturated nitriles like acrylonitrile, methacrylonitrile (see page 7, line 28 to page 8, line 10).

Allylacrylate is disclosed in a list of examples of compound (E) (see page 8, lines 10 to 18).

Cross-linked particles in the size range 1.01 to 0.1 μm are formed (see page 12, lines 26 to 36).

5. The European patent application has been refused for lack of novelty. The question arises as to whether the amended Claim 1 is novel with respect to FR-A-2 040 326, i.e. whether all four features of the characterising portion of the main claim are not disclosed in combination by the French patent specification.
6. Starting from the last feature (3), the correspondence of the three monomers with monomers in the state of the art is evident from the above comparison:

(a) corresponds to (A), (b) corresponds to (C) and (D) and (c) corresponds to (E).

.../...

In the application in suit, no counterpart can be seen for monomer (B) of FR-A-2 040 326. However, this monomer is an essential ingredient in the composition there described (0.1 to 3% in weight): cf., in particular Example 1 of the citation (see page 15, lines 21 to 24).

By restricting the copolymerizable ethylenically unsaturated comonomer (ingredient (b)) to those from original Claim 2, the Appellant has excluded the sulphur based monomers known from the citation. Therefore, feature (3) is not disclosed by the citation. It must be concluded that the amendment has established the novelty of the main claim and that of the rest of the claims since they are all formally dependent on Claim 1.

7. With further reference to the question of novelty, it must be observed that, in refusing Claim 1, the first instance conceded that Claims 2-10 of the application would appear to be novel by virtue of the second order transition temperature (now feature 2) specified (see III.2 in the decision).

This parameter has now been introduced with the subject-matter of Claim 2 into present Claim 1.

Neither this feature (2) nor the gel content (1a) can be found in FR-A-2 040 326. Although this citation is silent on these two features, the first instance questioned the novelty of the first one only. It is the Board's opinion that the novelty of the second one should also have been questioned for the same grounds as for feature (2) before conceding novelty.

Nevertheless, having regard to the novelty of the present Claim 1 on the basis of feature (3), it would not appear necessary to consider further at this stage, the other features (1), (1a) and (2).

8. Although the first communication from the Examining Division expressed doubts about the inventive character of the subject-matter of the original Claims 1-10, the matter of inventive step has not been finally assessed. It is in the Board's view proper procedure in respect of the rights of the Applicant that the question of patentability of the significantly amended main claim be considered by the first instance. Under these circumstances the Board seems it inappropriate to decide the issue but makes use of its power under Article 111(1) EPC to remit the case to the Examining Division for further prosecution.
- In its further examination, the Examining Division should also consider whether Claims 4 and 5 which appear to go beyond of the scope of the main claim, can be allowed.

Order

It is decided that

1. The decision of the Examining Division of 5 October 1982 is set aside.
2. The case is remitted to the Examining Division for further prosecution on the basis of amended Claims 1 to 6 (received on 14 July 1983).

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[Signature]