

Veröffentlichung im Amtsblatt	Ja/Nein
Publication in the Official Journal	Yes/No
Publication au Journal Officiel	Oui/Non

Aktenzeichen / Case Number / N^o du recours : T 20/88 - 3.3.1

Anmeldenummer / Filing No / N^o de la demande : 83 104 859.0

Veröffentlichungs-Nr. / Publication No / N^o de la publication : 0 095 653

Bezeichnung der Erfindung: Polymer/polyol compositions having improved
Title of invention: combustion resistance and a process for preparing
Titre de l'invention : polyurethanes.

Klassifikation / Classification / Classement : C08F 283/00

ENTSCHEIDUNG / DECISION

vom / of / du 3 January 1990

Anmelder / Applicant / Demandeur : Union Carbide Corporation

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 54

Schlagwort / Keyword / Mot clé : "Novelty (yes) - Functional technical feature
conferring novelty"

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt

European Patent
Office

Office européen
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number : T 20/88 - 3.3.1



D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 3 January 1990

Appellant : UNION CARBIDE CORPORATION
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Representative : Wuesthoff, Franz, Dr.-Ing.
Patentanwälte Wuesthoff
-v. Pechmann-Behrens-Goetz
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Decision under appeal : Decision of Examining Division 011
of the European Patent Office
dated 29 July 1987 refusing European
patent application No. 83 104 859.0
pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : K. Jahn
Members : C. Gérardin
G. Paterson

Summary of Facts and Submissions

- I. The European patent application No. 83 104 859.0, filed on 17 May 1983, claiming priorities of 18 May 1982 and 18 August 1982 from two earlier applications US 378 651 and US 409 177 and published on 7 December 1983 under the publication No. 95 653, was rejected by a decision of the Examining Division dated 29 July 1987.

The rejection was based on a set of 6 claims of which Claim 1 filed on 20 February 1987 reads as follows:

"A stable dispersion of from 5 to 50 weight percent - based on the weight of the dispersion - of a copolymer in a polyol, wherein

- (a) the copolymer containing 0.5 to 75 weight percent of acrylonitrile and 99.5 to 25 weight percent of styrene and optionally other polymerizable ethylenically unsaturated monomer(s);
- (b) the copolymer being prepared by a free-radical catalyst initiated process carried out at a temperature of $> 100^{\circ}\text{C}$ in the presence of a chain transfer agent selected from a mercaptane, methyl ethyl ketone, alcohol, aldehyde, halogenated compound and ethyl benzene or mixtures thereof and
- (c) the copolymer having a crosslinking coefficient of less than about 55; the crosslinking coefficient is determined by subtracting the percent transmission of light at 500 nm from 100 percent; the light transmission is determined at a 1 weight percent copolymer concentration in dimethylformamide in a 1 cm transmission cell".

II. The ground for this decision was non-compliance with the requirements of Article 54 EPC with regard to the teaching of following documents

- (1) US-A-4 282 331
- (2) US-A-4 119 586
- (3) US-A-4 242 249

which all teach the free-radical initiated copolymerisation of acrylonitrile and styrene in the presence of polyols.

In the decision it was first objected that the cross-linking coefficient XLC was an unusual parameter whose technical relevance had not been demonstrated by the Appellant (Applicant). This parameter could not be regarded as a distinguishing feature over the prior art, since different values thereof could only be obtained either by using a different amount of the same chain transfer agent or by using a chain transfer agent having a significantly different chain transfer activity. Since either condition was not reflected in the formulation of Claim 1, novelty of the product could not be acknowledged.

Further, it was specifically referred to Example 95, Table VIII of document (3) according to which the above reaction was carried out in ethylbenzene as solvent.

III. A notice of appeal was lodged against this decision on 10 September 1987 with payment of the prescribed fee. The Statement of Grounds of Appeal was filed on 27 November 1987.

Together with the Statement of Grounds the Appellant filed a single claim directed to the use of the previously claimed dispersions for producing a polyurethane having improved combustion resistance.

The only argument put forward by the Appellant was that the stable dispersion now used contained a specifically composed copolymer whose special feature was a cross-linking coefficient of less than 55 which was not to be found in document (3). Novelty should thus be acknowledged on that basis.

- IV. The Appellant requests the impugned decision to be set aside and prosecution of examination on the basis of the claim filed on 27 November 1987.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. The wording of the claims does not give rise to objections under Article 123(2) EPC.

The formulation as a use claim of the dispersion for the production of polyurethane having improved combustion resistance corresponds basically to the combination of original Claims 1, 7 and 8. In this regard, the Board notes that although the Statement of Grounds of Appeal refers to an use claim of the previously claimed dispersion as the basis of the appeal proceedings, the use claim actually filed requires the copolymerisation to be carried out at the temperature of 100°C exactly. Whether this was intentional or is a clerical error does not affect the present decision.

All the other amendments contribute to a more specific definition of the copolymer and the dispersion. The amount of copolymer in the polyol is disclosed in original Claim 2. The choice of styrene to be copolymerised with acrylonitrile is supported by original Claim 3; as to the optional presence of further comonomer(s), it is nothing else than another way to express that acrylonitrile is copolymerised with at least one other comonomer, as specified in original Claim 1. The temperature of the free-radical catalyst initiated copolymerisation reaction is to be found in original Claim 7 and the specific chain transfer agents are mentioned on page 10, lines 26 to 29 (mercaptane, alcohol, aldehyde, halogenated compound), in Example 19 (ethyl benzene) and in Example 23 (methyl ethyl ketone). Lastly, the method of determination of the cross-linking coefficient of the copolymer is disclosed on page 4, line 29 to page 5, line 17.

3. In the Board's judgment the formulation of a use claim for the dispersion previously claimed per se overcomes the objection of lack of novelty.
- 3.1 Although the processes according to documents (1) and (2) do not involve the use of chain transfer agents as such, some of the solvents suitable to carry out the copolymerisation reactions actually encompassed compounds having a chain transfer activity. The chain transfer agents now explicitly required under (b) of Claim 1 are different from the solvents listed in document (1) (compare column 5, lines 13 to 15) and in document (2) (compare column 7, line 60); moreover it is even specified in both documents (see column 5, lines 17 to 20 respectively column 7, lines 63 to 65) that the only requirement in the selection of the solvent is that it does not interfere with the polymerisation reaction, which by inference excludes any chain transfer activity.

3.2 The dispersion according to Example 95 of document (3) is prepared by copolymerisation of a 40/60 mixture of acrylonitrile and styrene in a polyol in presence of an azo catalyst and ethyl benzene (Table VIII in connection with Table II, Example 14). Although ethyl benzene is specifically described as solvent, it is self evident that this compound has the same influence on the reaction as in the application in suit, wherein it is mentioned as chain transfer agent; this means that the function of chain transfer agent cannot be regarded as a distinguishing feature over the prior art. The resulting copolymer exhibits a percent transmission of light of 70.4; although the method of determination of this parameter is not indicated, it seems reasonable to assume that this value was obtained for particles in a polyol in view of the technical explanation given by the Appellant in the examination procedure (reply of 26 August 1985, page 2, paragraph 3) and the method disclosed in document (1) (columns 22 and 23, Table XII, note(b)) and document (2) (column 13, lines 54 to 56). This interpretation is supported by the fact that the other properties which are enlisted in Table VIII, namely viscosity, filtration hindrance, solids on screen and centrifugable solids, obviously concern the dispersion. For this reason, the value of 70.4 for the percent transmission of light in the prior art cannot be compared with the value of this parameter required under (c) of the claim, which is determined at a 1% copolymer concentration in dimethylformamide, i.e. in solution, in a 1 cm transmission cell. In the absence of exact comparative data, it cannot be excluded that the product according to Example 95 actually exhibits a percent transmission of light and, therefore, a crosslinking coefficient as specified in the claim. However, for the reasons which follow, in the Board's view this disclosure does not deprive of novelty the subject-

matter of the application in suit which is specifically directed to polyurethanes with improved combustion resistance.

- 3.3 In reality, the correlation of the crosslinking coefficient of the copolymer and the suitability of the dispersion for the preparation of polyurethanes elastomers and foams having enhanced fire resistance reflects a newly discovered and newly disclosed technical effect. Following Decision G 2/88 of 11 December 1989 (to be published), the attaining of such a technical effect should in this circumstance be considered as a functional technical feature of the use claim. As specified in point 10.3, if that technical feature has not been previously made available to the public by any of the means as set out in Article 54(2) EPC, then the claimed invention is novel, even though such technical effect may have inherently taken place in the course of carrying out what has previously been made available to the public. In the present case, there is no disclosure in document (3) which would make available to the public the newly disclosed effect of the application in suit, which effect is a technical feature of the use claim.
- 3.4 In conclusion, therefore, the functional technical feature of the use claim confers novelty on such claim and the subject-matter thereof is novel with regard to the teaching of documents (1) to (3).
4. As stated above, the present decision is based on the claim on file according to which a temperature of exactly 100°C is required for the polymerisation reaction; it is self evident that the above conclusions apply equally to a use claim wherein this temperature would be within the range higher than 100°C, as originally specified.

Order

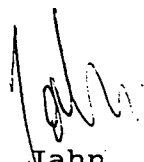
For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution.

The Registrar:


M. Beer

The Chairman:


K. Jahn

CB

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