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D E C I S I O N
of 22 March 2005

Case Number: T 0981/02 - 3.3.3

Application Number: 96910564.2

Publication Number: 0817805

IPC: C08F 136/18

Language of the proceedings: EN

Title of invention:
Polychloroprene Composition

Applicant:
E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 111(1), 123(2)

Keyword:

"Decision re Appeals - exercise of discretion"

"Decision re Appeals - remittal (yes)"

"Amendments - added subject-matter (no)"

Decisions cited:

T 0002/81, T 0925/98

Catchword:

-



Case Number: T 0981/02 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 22 March 2005

Appellant:

E.I. DU PONT DE NEMOURS AND COMPANY
1007 Market Street
Wilmington
Delaware 19898 (US)

Representative:

Carpmaels & Ransford
43 Bloomsbury Square
London WC1A 2RA (GB)

Decision under appeal:

Decision of the Examining Division of the
European Patent Office dated 25 April 2002 and
issued in writing on 4 June 2002 refusing
European application No. 96910564.2 pursuant to
Article 97(1) EPC.

Composition of the Board:

Chairman: R. Young
Members: A. Däweritz
A. Pignatelli

Summary of Facts and Submissions

- I. European patent application No. 96 910 564.2, based on International application No. PCT/US96/04110, filed on 26 March 1996, claiming the priorities of 27 March 1995 and 5 March 1996 of two earlier applications in the United States of America (08/411,183 and 08/611,114), respectively, and published under No. WO-A-96/30418 on 3 October 1996, was refused by a decision of the Examining Division, announced at the end of oral proceedings on 25 April 2002 and issued in writing on 4 June 2002.

In order to illustrate the core issue on which the decision of the Examining Division was based, it is sufficient to reproduce the wording of Claim 7 as originally filed:

- "7. An aqueous latex adhesive composition which comprises
- a) a mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene crystalline homopolymer having a gel content of 5-70 percent by weight;
 - b) 1 to 75 parts by weight of rosin per 100 parts by weight of a); and
 - c) a sufficient amount of water to provide a composition having a solids content of 25-65 weight percent based on the weight of component a)

with the proviso that the mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene homopolymer is prepared by free radical emulsion polymerization of 2-chloro-1,3-butadiene at a temperature of 5°C-20°C, to a conversion of 70-95%, and the amount of mercaptan or xanthogen disulfide modifier present during polymerization is within the range of 1.5×10^{-4} - 2.5×10^{-4} moles per mole of 2-chloro-1,3-butadiene."

II. The decision was based on a Main Request containing a set of 16 claims and Auxiliary Requests 1 to 4, containing sets of 10, 18, 12 and 11 claims, respectively. All these requests had been submitted during the oral proceedings. Whilst the Main request and Auxiliary Requests 1 to 3 contained claims to an elastomer composition and claims to an aqueous latex composition, all claims relating to an elastomer composition had been deleted from Auxiliary Request 4.

In view of the facts and submissions to be dealt with in this decision, further reference need only be made to the Main Request and Auxiliary Request 4.

The independent claims according to the Main Request read as follows:

"1. An elastomer composition which comprises a mercaptan-modified or xanthogen disulphide-modified crystalline 2-chloro-1,3-butadiene homopolymer having a gel content of from 5 to 70% by weight based on the amount of the tetrahydrofuran-insoluble polymer which is prepared by free radical emulsion polymerisation at a temperature

of from 5°C to 20°C, to a conversion of from 70-95% in the presence of 1.0×10^{-5} to 3.9×10^{-4} moles of mercaptan modifier or xanthogen disulphide modifier per mole of 2-chloro-1,3-butadiene homopolymer.

8. An aqueous latex adhesive composition which comprises
 - (a) a mercaptan-modified or xanthogen disulphide-modified 2-chloro-1,3-butadiene crystalline homopolymer having a gel content of from 5 to 70% by weight based on the amount of the tetrahydrofuran-insoluble polymer;
 - (b) 1 to 75 parts by weight of rosin per 100 parts by weight of (a); and
 - (c) a sufficient amount of water to provide a composition having a solids content of 25-65 weight percent based on the weight of composition (a)

with the proviso that the mercaptan-modified or xanthogen disulphide-modified 2-chloro-1,3-butadiene homopolymer is prepared by free radical emulsion polymerization of 2-chloro-1,3-butadiene at a temperature of from 5°C to 20°C, to a conversion of 70-95%, and the amount of mercaptan modifier or xanthogen disulphide modifier present during the polymerization is within the range of 1.0×10^{-5} to 3.9×10^{-4} moles of modifier per mole of 2-chloro-1,3-butadiene homopolymer."

Independent Claim 1 according to Auxiliary Request 4 read as follows:

- "1. An aqueous latex adhesive composition which comprises
- (a) a mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene crystalline homopolymer having a gel content of from 5 to 70% by weight based on the amount of the tetrahydrofuran-insoluble polymer;
 - (b) 1 to 75 parts by weight of rosin per 100 parts by weight of (a); and
 - (c) a sufficient amount of water to provide a composition having a solids content of 25-65 weight percent based on the weight of component (a)

with the proviso that the mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene homopolymer is prepared by free radical emulsion polymerization of 2-chloro-1,3-butadiene at a temperature of from 5°C to 20°C, to a conversion of 80-95%, and the amount of mercaptan or xanthogen disulfide modifier present during the polymerization is within the range of 1.0×10^{-5} to 1.0×10^{-3} moles of modifier per mole of 2-chloro-1,3-butadiene."

The remaining Claims 2 to 7 and 9 to 16 of the Main Request and the remaining Claims 2 to 11, according to

Auxiliary Request 4, were dependent claims concerning elaborations of the subject-matter defined in the respective preceding independent claim.

III. According to the decision, none the five requests, filed at the oral proceedings, met the requirements of Article 123(2) EPC.

(a) Thus, in each of the five requests, the core issue with regard to Article 123(2) EPC concerned the replacement of the original range of modifier concentration ("... 1.5×10^{-4} - 2.5×10^{-4} moles ...") by other ranges of modifier concentrations introduced into the new independent claims, after it had been found that the respective amounts of modifiers used in all the examples had been outside the above original range.

(b) The lower limit of this feature as amended in Claims 1 and 8 of the Main Request (ie 1.0×10^{-5} mol; section II, above) had been based on the range disclosed on page 6, lines 22 to 24 ("Generally, the useful range of chain transfer agent is between 1×10^{-5} to 1×10^{-3} moles of chain transfer agent per mole of chloroprene monomer", this range will be referred herein as the "useful range").

(c) The Examining Division found that it had not been clearly and unambiguously derivable from the above wording of the passage disclosing the useful range, that the statement made therein applied to the invention as originally claimed. The term "generally" might rather have indicated that the

concentration range specified therein related to a range of chain transfer agents which was generally used in the field of crystalline chloroprene homopolymers and that the range specified in the original independent claims represented an inventive selection over that broader range. Moreover, the useful range had been disclosed in the relevant sentence "in complete isolation from the remaining essential process features (i.e. the temperature, the conversion percentage and the kind of modifier) and also from the essential product feature [*sic*] (i.e. the gel content, and implicitly the specific end groups introduced into the homopolymer due to the specific modifier selected)". However, it had been clear from the context that these process and product features were interconnected to a great extent. Therefore, the lower amount of modifier in the independent claims might not have been reduced by a factor of more than 10 (in comparison to the initial lower limit of the range) "without having possibly to adjust in parallel the ranges specified for the other process features in order to be able, in fine, to keep the product feature (i.e., essentially the gel content) within the range specified" (Reasons: 3.a).

- (d) With regard to the upper limit of the above range, which had been derived by calculation from the amounts of modifier and chloroprene used in two specific examples, it was held that the concentration had been extracted from examples, irrespective of the other process and product features specifically associated with this

concentration in those examples. It was concluded that the insertion of the new upper limit of the range also contravened Article 123(2) EPC (Reasons: 3.b).

- (e) The same arguments were also held valid for the respective amended ranges of the modifier concentration in each of Auxiliary Requests 1 to 3.
- (f) As regards Auxiliary Request 4 (section II, above), it was held that, apart from the conversion degree further limited from "70-95%" to "80-95%", the core issue had been the same as in the previous requests. Since the new range of the modifier concentration extended beyond both the lower and the upper limits of the range as initially claimed (see original Claim 7 reproduced in section I, above) and had not been disclosed in combination with the remaining features of the independent claim in their original scope, the reasons referred to in section III(c), above, with respect to the lower limit of this range in Claim 8 of the Main Request were also valid for both limits of this range in Claim 1 of Auxiliary Request 4.

Consequently, the application was refused.

- IV. On 29 July 2002, a Notice of Appeal against the above decision, including the Statement of Grounds of Appeal, was lodged by the Appellant (Applicant) who contested the findings of the Examining Division. The prescribed fee was paid on the same date.

Together with the Notice of Appeal, a new Main Request was filed which corresponded to previous Auxiliary Request 4 (section II, above).

The Appellant argued that the level of modifier as amended had had its basis on page 6, lines 22 to 24 of the application as originally filed and that the above finding in the decision under appeal was not correct in view of this general statement in the description and that, hence, this range had been disclosed in combination with any further features of the claim such as conversion levels. Therefore, the new Main Request would meet the requirements of Article 123(2) EPC.

Furthermore, the Appellant referred to some discussion during the oral proceedings before the Examining Division and requested interlocutory revision under Article 109 EPC and reimbursement of the appeal fee under Rule 67 EPC.

- V. By communication dated 6 November 2002, the Appellant was informed that the case had been referred to this Board of Appeals, and, by communication dated 10 August 2004, that it was, therefore, necessary for the Appellant to reconsider its requests, because Article 109 EPC was no longer applicable. Moreover, the Appellant was invited to clearly establish the reasons why, in its opinion, a reimbursement of the appeal fee was equitable by reason of a substantial procedural violation and to explain in detail which steps taken by the Opposition Division were deemed to amount to such a violation.

Furthermore, preliminary, provisional observations to the wording of Claim 1 under consideration were made (i) with regard to the requirements of Article 123(2) EPC and (ii) as regards the definition of the "gel content".

With respect to issue (i), it was pointed out that page 6 of the description as filed referred to an amount of modifier of " 1×10^{-5} to 1×10^{-3} moles of chain transfer agent ...". Whilst the substitution of the term "modifier" for the term "chain transfer agent" in this formulation in Claim 1 was not objected to, since both terms had been used in the application as synonyms (cf. page 4, line 23), the amended wording of the range in the claim was deemed not to comply with Article 123(2) EPC, because the replacement of "1" by "1.0" at both occurrences involved a change of information, and, therefore, constituted an extension beyond the contents of the application as filed.

Furthermore, (ii) the gel content of component (a) was obviously not independent of the method of its determination, but, rather, the result of a measurement carried out in specific conditions and subjected to a calculation on the basis of a specific equation (cf. page 3, line 32 to page 4, line 16). Therefore, it was deemed necessary to recite these particulars in Claim 1 in order unambiguously to define this feature.

By letter dated 6 October 2004, the Appellant requested that the decision under appeal be set aside, withdrew the request for reimbursement of the appeal fee and submitted a sole request containing a new set of 11 claims differing from the previous set (cf. sections II and IV, above) only in a new version of independent

Claim 1 wherein the two issues (i) and (ii) addressed in the communication (see the three previous paragraphs, above) were dealt with.

VI. In reply to a conversation by telephone on 10 February 2005, wherein some issues of inconsistency in Claim 1 in relation to the method of determination of the gel content had been discussed, a further amended set of Claims 1 to 11 was filed on the same date, Claim 1 thereof reading as follows:

- "1. An aqueous latex adhesive composition which comprises
- (a) a mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene crystalline homopolymer having a gel content of from 5 to 70% by weight based on the amount of the tetrahydrofuran-insoluble polymer;
 - (b) 1 to 75 parts by weight of rosin per 100 parts by weight of (a); and
 - (c) a sufficient amount of water to provide a composition having a solids content of 25-65 weight percent based on the weight of component (a)

with the proviso that the mercaptan-modified or xanthogen disulfide-modified 2-chloro-1,3-butadiene homopolymer is prepared by free radical emulsion polymerization of 2-chloro-1,3-butadiene at a temperature of from 5°C to 20°C, to a conversion of 80-95%, and the amount of mercaptan

or xanthogen disulfide modifier present during the polymerization is within the range of 1×10^{-5} to 1×10^{-3} moles of modifier per mole of 2-chloro-1,3-butadiene;

wherein the gel content of component (a) is determined by the following method:

approximately 2 ml of latex (W), having solids content (L) is weighed and injected into a vessel containing 100 ml of tetrahydrofuran; the vessel is rolled for not less than 30 minutes and not more than 120 minutes to dissolve the soluble polymer; a 40 ml aliquot of the mixture is then centrifuged for 1 hour to separate the insoluble gel polymer from the tetrahydrofuran solution; a 20 ml portion of the supernatant liquid is removed and the solvent is evaporated; the weight of the soluble polymer (A) is then measured and the gel content is calculated according to the following equation;

$$\% \text{ gel} = 100 - 100[(F \times A)/(W \times L)]$$

where F = normalization factor of 5.1

A = dried solids content of soluble portion

W = weight of latex sample, and

L = latex solids content."

Reasons for the Decision

1. The appeal is admissible.

2. *Article 123(2) EPC*
 - 2.1 Claim 1 concerns an aqueous latex adhesive composition which comprises (a) a mercaptan-modified or xanthogen

disulphide-modified chloroprene (2-chloro-1,3-butadiene) crystalline homopolymer, (b) 1 to 75 parts by weight of rosin per 100 parts by weight of component (a); and (c) a sufficient amount of water to provide a composition having a solids content of 25 to 65 weight percent, based on the weight of component (a).

Component (a) is further defined in this claim by its gel content of from 5 to 70 % by weight, based on the amount of the THF-insoluble polymer, and in terms of a free radical emulsion polymerisation, by which it is obtained, at a temperature of from 5 to 20°C.

- 2.1.1 So far this definition of the latex composition corresponds to the one in the passages on page 2, lines 17 to 30 and on page 3, lines 32/33 of the original description.
- 2.1.2 In comparison to these passages of the original description, Claim 1 includes, however, two further process features referring to a conversion of from 80 to 95% and to an amount of mercaptan or xanthogen disulphide modifier present during the polymerisation being within the range of 1×10^{-5} to 1×10^{-3} moles of modifier per mole of chloroprene, and a description of the method of determination of the gel content, the latter having been disclosed on from page 3, line 32 to page 4, line 16 of the application as filed.
- 2.1.3 The conversion range has been formed from the upper limit of the overall range and the lower limit of the preferred range (page 6, lines 30 to 32). According to established jurisprudence (see eg T 2/81, OJ EPO 1982, 394, point 3 of the reasons; and T 925/98 dated

13 March 2001, not published in OJ EPO, point 2 of the reasons; both referred to in the Case Law of the Boards of Appeal of the EPO, 4th Edition 2002, chapter III.A.3.3), such a combination of a preferred disclosed narrower range and one of the part-ranges lying within the disclosed overall ranges on either side of the narrower range is unequivocally derivable from the original disclosure.

- 2.1.4 As regards the formulation concerning the amount of modifier, the Appellant referred to a passage in the description (page 6, lines 22 to 24) reading " 1×10^{-5} to 1×10^{-3} moles of chain transfer agent". The amendment of this range, which had already been made in the previous Auxiliary Request 4, however, in the form of " 1.0×10^{-5} to 1.0×10^{-3} moles of chain transfer agent" (cf. section V, above), was not allowed by the Examining Division for the reason that the word "generally", as used in the description in the context of the above range, might have suggested that this range did not relate to the specific selection as claimed but to a range generally applied in this field of the art. Nor was the sentence, according to the decision under appeal, disclosed in combination with the remaining features of the new claim (section III(c), above).

Whilst agreeing to the statement in the decision under appeal that the process features affect to a great extent the properties of the resulting homopolymer (point 3.a of the reasons), the Board cannot concur with the reasoning referred to in the previous paragraph, because the range now contained in Claim 1 has been disclosed in a paragraph dealing with

"chloroprene homopolymers having gel contents within the range useful in the present invention". The same paragraph also teaches that, for the purpose of obtaining such polymers, it is most effective to regulate the amount of chain transfer agent utilised during polymerisation and also to control monomer conversion. The term "modifier" is used in the application as synonym for "chain transfer agent" and for the same compounds (page 4, line 23; page 5, lines 1 to 5). Additionally, the influence of slight adjustments in both of the above process features is addressed as providing higher or lower gel contents as required (page 6, lines 7 to 10 and 20 to 24). A similar teaching is found on page 4, lines 24 to 27, pointing out that the gel content of the chloroprene homopolymer may be controlled during the polymerisation by adjusting the polymerisation temperature, the amount of chain transfer agent present and the monomer conversion.

- 2.1.5 In order to achieve the original goals (page 2, lines 6 to 8 and 18/19), Claim 1 has not ceased, though, to require the product feature (ie gel content) to be achieved and the process feature (ie polymerisation temperature) to be applied, which had been part of the broadest original definition of the claimed subject-matter (sections 2.1 and 2.1.1, above). The additional process features referred to on page 6 of the description and considered above (ie conversion and amount of modifier) do not contravene the previous requirements in the definition of the latex composition.

2.2 Whilst it is true that the present Claim 1 extends beyond the originally filed independent claim 7 in that the range of the amount of modifier has been broadened (cf. sections III(a), (c) and (f), above), Article 123(2) EPC does not exclude such an amendment. According to this article, the yardstick for amendments is given by the application as filed, including the description of the invention, one or more claims and any drawings referred to in the description or the claims. As shown above, all the features of Claim 1 have been part of the original content of the application as filed in an appropriate context.

2.3 In view of these facts and findings, the Board is satisfied that the requirements of Article 123(2) EPC are met by Claim 1 as submitted with the letter dated 10 February 2005.

Since the only ground for refusal of the application in suit in the decision under appeal is no longer justified for the above reasons, the decision under appeal cannot be upheld.

3. In view of the request of the Appellant and of the fact that the previous examination and the decision under appeal focused only on the requirements of Article 123(2) EPC with respect to Claim 1, this Board has decided to exercise its power under Article 111(1) EPC to remit the case to the Examining Division for continuation of the examination of the application on the basis of the sole request filed by letter dated 10 February 2005.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution on the basis of the set of Claims 1 to 11 submitted as the sole request with the letter dated 10 February 2005.

The Registrar:

The Chairman:

E. Görgmaier

R. Young