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**Datasheet for the decision
of 12 January 2012**

Case Number: T 0416/08 - 3.3.07

Application Number: 00953937.0

Publication Number: 1200046

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A61K 7/032

Language of the proceedings: EN

Title of invention:
Cosmetics containing amphoteric polyurethanes

Patent Proprietors:
Akzo Nobel N.V.

Opponents:
BASF SE

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - all requests (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 0416/08 - 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 12 January 2012

Appellants: BASF SE
(Opponents) D-67056 Ludwigshafen (DE)

Respondents: Akzo Nobel N.V.
(Patent Proprietors) Velperweg 76
NL-6824 BM Arnhem (NL)

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 21 December 2007
rejecting the opposition filed against European
patent No. 1200046 pursuant to Article 101(2)
EPC.

Composition of the Board:

Chairman: J. Riolo
Members: D. Semino
D. T. Keeling

Summary of Facts and Submissions

I. The appeal of the opponents lies against the decision of the opposition division announced at the oral proceedings on 26 October 2007 to reject the opposition against European patent No. 1 200 046. The granted patent comprised 9 claims, claim 1 reading as follows:

"1. A cosmetic composition comprising an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule, and a water-soluble resin."

II. A notice of opposition was filed against the granted patent requesting revocation of the patent in its entirety on the grounds of lack of novelty and lack of inventive step in accordance with Article 100(a) EPC. The opposition was *inter alia* supported by the following documents:

D1: WO-A-99/58100

D2: WO-A-97/17386

D4: WO-A-99/39688

D7: EP-A-0 619 111

D9: DE-A-41 12 327

D11: K. Schrader, Grundlagen und Rezepturen der Kosmetika, Hütig Buch Verlag Heidelberg, 1989, pages 736-763

D12: W. Umbach, Kosmetik, Georg Thieme Verlag, 1995, pages 276-283

III. The decision of the opposition division can be summarised as follows:

- (a) The composition of claim 1 was novel over D1 and D4 (both belonging to the state of the art according to Article 54(3) EPC), because it could not be established that the polymers used in the relevant compositions disclosed therein were water-soluble, over D2, because it did not disclose the combination of an amphoteric polyurethane and a water-soluble resin, and over D9, because the polyurethane used in the relevant example was not amphoteric and did not contain tertiary amino groups.
- (b) Document D7, which was the closest prior art, disclosed various polyurethanes formulated in aerosol hair sprays, which were anionic with the exception of a single amphoteric one. The composition of claim 1 was inventive over D7 possibly combined with D11 and D12, which disclosed water-soluble resins to be used as film-forming polymers in hair fixative compositions in order to improve durability, because there was no single advice in any of those documents that it might be possible to combine the different base polymers to achieve a hair fixative composition which showed the benefits of each of the single polymers. Moreover, the skilled person had to select the amphoteric polymer of D7, which represented a weak alternative to the preferred anionic polyurethanes disclosed therein.

IV. The opponents (appellants) appealed that decision. With the statement setting out the grounds of appeal they maintained all their objections of lack of novelty and lack of inventive step.

- V. With the reply to the grounds of appeal the patent proprietors (respondents) filed a new main request and seven auxiliary requests. In addition they filed a copy of tables 1 to 32 of the patent in suit in which the missing experimental data had been supplemented. Those tables had to be regarded as additional experimental evidence.
- VI. In a communication sent in preparation of the oral proceedings the Board addressed some of the issues raised by the requests filed by the respondents with the reply to the grounds of appeal.
- VII. In reaction to that communication the respondents filed by letter of 12 December 2011 six sets of claims as main requests and first to fifth auxiliary requests.
- VIII. Oral proceedings were held on 12 January 2012. During the oral proceedings the respondents withdrew the main request and the first and second auxiliary requests filed by letter of 12 December 2011 and maintained the third to fifth auxiliary requests filed with that letter, which became the main request and the first and second auxiliary requests. The main and first auxiliary requests included only use claims, while the second auxiliary request included exclusively product claims. Claim 1 according to those requests read as follows:

Main request

"1. Use of a composition comprising an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule, and

a water-soluble resin; as a hair cosmetic, characterised in that said amphoteric urethane resin has in its structure a structural unit that is derived from ethylene oxide, which structural unit is selected from the group consisting of:

$-(\text{CH}_2-\text{CH}_2-\text{O})_n-$ (I) where n is from 3 to 300,

$\begin{array}{c} \text{CH}_3 \\ | \\ -(\text{CH}-\text{CH}_2-\text{O})_m- \end{array}$ (II) where m is from 3 to 300, and

both (I) and (II), where n+m is from 3 to 300."

First auxiliary request

"1. Use of a composition comprising an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule, and a water-soluble resin; as a hair cosmetic, characterised in that said amphoteric urethane resin has in its structure a structural unit that is derived from ethylene oxide, which structural unit is selected from the group consisting of:

$-(\text{CH}_2-\text{CH}_2-\text{O})_n-$ (I) where n is from 20 to 120,

$\begin{array}{c} \text{CH}_3 \\ | \\ -(\text{CH}-\text{CH}_2-\text{O})_m- \end{array}$ (II) where m is from 20 to 120, and

both (I) and (II), where n+m is from 20 to 120."

Second auxiliary request

"1. A hair cosmetic composition comprising an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one

molecule, and a water-soluble resin, characterised in that

said amphoteric urethane resin has in its structure a structural unit that is derived from ethylene oxide, which structural unit is selected from the group consisting of:

$-(\text{CH}_2-\text{CH}_2-\text{O})_n-$ (I) where n is from 20 to 120,

CH_3

|

$-(\text{CH}-\text{CH}_2-\text{O})_m-$ (II) where m is from 20 to 120, and

both (I) and (II), where n+m is from 20 to 120."

- IX. The arguments of the appellants (opponents), as far as relevant to the present decision, can be summarised as follows:

Inventive step

The formulation of D7 comprising polyurethane B, which included all the features of the polyurethane in the independent claims of the requests on file, and its use as a hair fixative represented the closest prior art and differed from the subject-matter claimed only in that no water-soluble resin was present in the formulation. The water-soluble resin improved the durability of the coiffure and no synergy could be acknowledged in the combination of the polyurethane and the water-soluble resin, since the effects of the compositions containing both ingredients were simply the sum of the effects of the compositions containing the individual compounds. The problem solved was therefore to modify the composition of D7 in order to improve durability. According to common general knowledge, as represented by D11, the use of water-soluble film-forming polymers, such as

vinylpyrrolidone/vinyl acetate copolymers, to improve durability, was known. The skilled person would therefore add those polymers to the amphoteric polyurethane of D7 in order to solve the posed problem. For those reasons, both the independent use claims of the main and first auxiliary requests and the independent product claim of the second auxiliary request were not inventive.

- X. The arguments of the respondents (patent proprietors), as far as relevant to the present decision, can be summarised as follows:

Inventive step

D7 did indeed disclose a hair fixative comprising a polyurethane with all the features of the polyurethane in the independent claims according to the requests on file (polyurethane B). However, that polyurethane was not the best performing polymer of D7, so that its choice amounted already in itself to a first selection within that document, which the skilled person would not accomplish, since he would start from a better performing anionic polymer, such as polyurethane E. In any case D7 did not disclose any combination of a polyurethane with a water-soluble polymer. The comparative examples in the patent supplemented by the experimental evidence filed with the reply to the grounds of appeal showed that the specific polyurethanes had excellent touch and unsatisfactory durability on application, while the water-soluble resins had excellent durability and unsatisfactory touch. Surprisingly the compositions including both ingredients retained the advantages of the individual

compounds, namely good touch and good durability on application, without any deterioration in those properties due to the presence of the other component. A synergistic effect was therefore present. The problem solved by the claimed invention was therefore that of improving durability with respect to D7 while maintaining good touch. There was no indication in D11 that the resin disclosed therein could be combined with a polyurethane in order to increase durability and with no detrimental effect on touch. Actually there was no mention of touch in that document. The skilled person would therefore not have added the polymer of D11 to the polyurethane of D7, because it was known that they had a detrimental effect on touch. Without any clear incentive in those documents the combination of D7 and D11 would result only from an ex-post-facto analysis. Those arguments applied equally to use claim 1 of the main and first auxiliary requests and product claim 1 of the second auxiliary request.

- XI. The appellants (opponents) requested that the decision under appeal be set aside and that the European patent be revoked.

- XII. The respondents (patent proprietors) requested that the patent be maintained according to the main request or auxiliary requests 1 or 2 corresponding respectively to auxiliary requests 3 to 5 filed with letter of 12 December 2011.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Inventive step*

- 2.1 Document D7 has been considered as the closest prior art both in the decision under appeal and in all the arguments of the parties regarding inventive step. The Board sees no reason to depart from this choice.
- 2.2 D7 discloses an aqueous based hair fixative composition that comprises a carboxylated linear polyurethane comprising the reaction product of one or more 2,2-hydroxymethyl-substituted carboxylic acids, one or more organic compounds having no more than two active hydrogen atoms, and one or more organic diisocyanates; one or more cosmetically acceptable organic or inorganic bases; and a solvent comprising water, and, optionally, one or more polar organic solvents (claim 1).
- 2.3 In particular polyurethane B disclosed in the examples (page 6, line 34 to page 7, line 15) is the reaction product of *inter alia* a first polyethylene glycol (2000 molecular weight), a second polyethylene glycol (8000 molecular weight), dimethylol propionic acid, methylenedi-p-phenyl diisocyanate and N-methyl diethanolamine (table at the bottom of page 6). Polyurethane B is amphoteric by virtue of the presence of N-methyl diethanolamine and dimethylol propionic acid (page 10, lines 47-49) and was formulated for

testing purposes into an aerosol hair spray as all the polyurethanes of the examples (page 9, lines 38-39). Polyurethane B performed comparably to a commercially available octyl-acrylamide/acrylates/t-butylaminoethylmethacrylate copolymer used as control (page 9, lines 45-46) as far as curl retention was concerned (page 9, lines 46-48 and page 10, lines 49-50).

2.4 It was not disputed by the parties that polyurethane B of D7 is an amphoteric urethane resin having at least one carboxyl group (from dimethylol propionic acid) and at least one tertiary amino group (from N-methyl diethanolamine) in one molecule, and containing in its structure a structural unit consisting of $-(\text{CH}_2-\text{CH}_2-\text{O})_n-$ (I) where n is from 3 to 300 (from any of the two polyethylene glycols) and that D7 discloses the use of a composition comprising polyurethane B as a hair cosmetic.

2.5 The allegation of the respondents that the composition of D7 comprising polyurethane B and its use as a hair cosmetic would not be a reasonable starting point for the analysis of inventive step, since there are compositions in D7 (in particular comprising anionic polyurethanes) which are better performing than the one comprising polyurethane B, is not considered as convincing by the Board. The starting point for the analysis of inventive step is, according to the case law (Case Law of the Boards of Appeal of the EPO, 6th edition 2010, I.D.3.1), normally a prior art document which corresponds to a purpose or technical effect similar to that of the invention (use as a hair fixative as in the whole of D7) and has the most

relevant technical features in common, i.e. requiring the minimum of structural and functional modifications. There is no doubt that the disclosure in D7 which requires the minimum of structural and functional modifications to arrive at the invention is that which concerns the use of polyurethane B in a hair fixative. That disclosure is therefore the closest prior art in the present case, independently of the performance of the other embodiments of D7.

- 2.6 The use in claim 1 of the main request differs from the use of the composition comprising polyurethane B in D7 in that the composition used in claim 1 additionally contains a water-soluble resin.
- 2.7 The patent in suit aims at solving the problem of "providing cosmetics which include antithetic physical properties, i.e. touch and durability" (paragraph [0004]).
- 2.8 The examples and comparative examples in the patent in suit concerning hair cosmetics (paragraphs [0072] to [0093] and tables 1 to 20) supplemented by the version of the tables filed by the respondents with the reply to the grounds of appeal show that compositions comprising only an amphoteric polyurethane as defined in claim 1 of the main request have excellent touch and not fully satisfactory durability (tables 5, 10, 15 and 20), while compositions including additionally a water-soluble resin maintain the excellent touch and achieve good durability (tables 1-3, 6-8, 11-13 and 16-18).
- 2.9 In view of the performance of compositions including only polyurethane (such as the one in D7), the problem

solved by the subject-matter of claim 1 of the main request is, starting from the use of the composition comprising polyurethane B of D7, that of providing a use as a hair cosmetic of another cosmetic composition having improved durability while maintaining good touch. This problem has been shown to be effectively solved by the claimed subject-matter in view of the tests in the patent as supplemented during appeal proceedings.

- 2.10 Document D11 (an encyclopaedia in the field of cosmetics) discloses in the context of hair fixatives (page 737, point 2.2.7.1) that a better durability is obtained through the use of film-forming polymers (page 738, last four lines to page 739, first two lines) and that the most common film-forming polymers used in hair fixatives are vinylpyrrolidone/vinyl acetate copolymers, vinyl acetate/crotonate copolymers, methyl vinyl ether/maleic anhydride copolymers and vinylpyrrolidone/quaternary dimethylaminoethyl methacrylate copolymers (page 739, point 2.2.7.1.1, fourth paragraph).
- 2.11 All the film-forming polymers listed in D11 are water-soluble resins according to the patent in suit (paragraphs [0041] to [0045], in particular page 5, lines 49-50 and 56, page 6, lines 8-9 and 13-14), which has not been disputed by the respondents.
- 2.12 The skilled person aiming at solving the posed problem would consider, in view of D11, adding the film-forming polymers to the composition comprising polyurethane B of D7 in order to increase durability. In doing so, he would have no reason to think that touch will be worsened to an unacceptable degree, since the use of

the film-forming polymers to improve durability of hair fixatives is without limitations in D11 and no prejudice has been shown which would discourage the skilled person from employing those polymers. Through the addition of any of the film-forming polymers of D11 to the composition comprising polyurethane B of D7 the skilled person would obtain the use in claim 1 of the main request without any inventive activity.

2.13 For these reasons the subject-matter of claim 1 of the main request does not involve an inventive step.

First auxiliary request

3. *Inventive step*

3.1 The use in claim 1 according to the first auxiliary request differs from the use in claim 1 according to the main request only in that the number of repeating

units $-(\text{CH}_2-\text{CH}_2-\text{O})_n-$ and/or $-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}-\text{CH}_2-\text{O})_m-$ in the structural unit derived from ethylene oxide has been limited to the range 20 to 120 as opposed to 3 to 300.

3.2 Polyurethane B disclosed in D7 contains a structural unit derived from ethylene oxide with a number of repeating units in the range 20 to 120 (from the polyethylene glycol with a molecular weight of 2000 used as reagent), so that the added feature does not constitute any further difference with respect to the closest prior art.

3.3 Therefore the use in claim 1 according to the first auxiliary request does not involve an inventive step

for the same reasons as the use in claim 1 according to the main request (points 2.1 to 2.13, above).

Second auxiliary request

4. *Inventive step*

4.1 Claim 1 according to the second auxiliary request concerns the product whose use is claimed in claim 1 according to the first auxiliary request.

4.2 The same reasoning developed for claim 1 of the main request (points 2.1 to 2.13, above) and considered valid also for claim 1 of the first auxiliary request (points 3.1 to 3.3, above) equally applies to claim 1 according to the second auxiliary request with the only difference that, due to the different category of the claim, the problem solved needs to be reformulated as, starting from the composition comprising polyurethane B of D7, that of providing a hair cosmetic composition having improved durability while maintaining good touch.

4.3 As for these reasons the composition *per se* is obvious in relation to the prior art D7 in combination with D11, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step either. Moreover, the respondents did not provide any additional arguments with respect to those already dealt with in relation to the main and first auxiliary requests.

5. Since claim 1 according to all the requests on file does not involve an inventive step, there is no need

for the Board to decide on any other of the objections of the appellants.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar

The Chairman

S. Fabiani

J. Riolo