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D E C I S I O N
of 9 December 1998

Case Number: T 0002/95 - 3.3.1

Application Number: 87309338.9

Publication Number: 0265257

IPC: C11D 3/37

Language of the proceedings: EN

Title of invention:
Detergent composition

Patentee:
Unilever Plc, et al

Opponent:
Procter & Gamble European Technical Center N.V.
BASF Aktiengesellschaft, Ludwigshafen

Headword:
Detergent composition/UNILEVER

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes) - problem and solution approach - non-obvious combination of known components"

Decisions cited:
T 0435/91, T 0409/91, T 0513/90

Catchword:
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Boards of Appeal

Chambres de recours

Case Number: T 0002/95 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 9 December 1998

Appellant: Unilever Plc et al
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Respondent: Procter & Gamble European Technical Center
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Respondent: BASF Aktiengesellschaft, Ludwigshafen
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 26 October 1994

revoking European patent No. 0 265 257 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: J. M. Jonk
S. C. Perryman

Summary of Facts and Submissions

I. The Appellants (proprietors of the patent) lodged an appeal against the decision of the Opposition Division by which European patent No. 0 265 257 was revoked in response to oppositions, which had been filed against the patent as a whole.

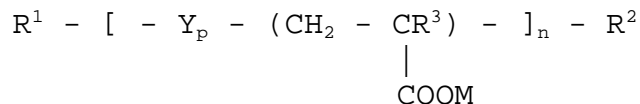
II. The decision was based on the claims as granted, Claim 1 reading as follows:

"A detergent composition comprising a detergent-active material and a detergency builder characterised in that it further includes from 0.3 to 15% by weight of a polymer mixture comprising the following polymeric materials (a), (b) and (c):

(a) an alkalimetal carboxymethylcellulose;

(b) a vinylpyrrolidone polymer having an average molecular weight within the range of 5,000 to 350,000;

(c) a polycarboxylate polymer selected from compounds having the empirical formula:



wherein Y is a maleic acid (anhydride) unit; R¹ and R² are bleach- and alkali-stable polymer-end groups; R³ is H, OH or C₁-C₄ alkyl; M is H, alkali metal, alkaline earth metal, ammonium or other water-soluble cation; p

is from 0 to 2; and n is at least 10; and mixtures thereof at a mixing ratio of polymer (a):polymer (b) within the range of 1:2 to 2:1 and of polymer (b):polymer (c) within the range of 1:1 to 1:4."

III. The oppositions were supported by several documents including documents:

(1) GB-A-2 094 826,

(2) US-A-3 318 816,

(3) EP-B-0 066 915,

(4) GB-A-1 348 212,

(5) EP-B-0 009 954,

(7) EP-A-0 158 260,

(8) EP-B-0 025 551, and

(9) DE-C-2 403 894 .

IV. The Opposition Division held that the subject-matter of Claim 1 of the disputed patent was novel, but did not involve an inventive step in the light of document (4) in combination with document (3) and/or document (8).

V. Oral proceedings were held on 9 December 1998.

VI. During these oral proceedings the Appellants argued essentially that the compositions of the patent in suit showed improved fading properties and that this finding

was not obvious in the light of the cited prior art. In this context, they relied on their test-reports as submitted on 24 May 1995 and 9 November 1998. Moreover, they noted that the test-report as submitted by Respondent 01 (Opponent I) on 15 September 1995 concerning the colour-care properties of compositions of the patent in suit did not deal with colour fading.

VII. The Respondents (Opponents) admitted that the claimed subject-matter was novel.

However they maintained their point of view that the subject-matter of the present claims did not involve an inventive step in view of document (4), optionally in combination with one or more of the other cited documents.

In this context, they disputed that the claimed detergent compositions would provide advantages compared to the closest state of the art as disclosed in document (4). They argued in particular that the test-reports as submitted by the Appellants did not represent a proper comparison to said closest state of the art. Moreover, even if the test-results would be taken into consideration by the Board, they would not show an improvement within the whole scope of Claim 1 of the patent, since the compositions as claimed comprised anionic surfactants and bleaching agents having a negative effect on fading properties, and because the lower limit of the claimed range of amounts of mixtures of polymers (a), (b) and (c) would likely be too small for obtaining the alleged effect. In this context, they referred to the decisions of the Boards of Appeal T 435/91 and T 409/91.

Furthermore, the Respondents argued in view of the cited prior art, and having regard to the decision T 513/90, that the use of polycarboxylate polymers as defined in present Claim 1 under (c) for their well known purposes as builders, antideposition agents or antiincrustation agents in compositions such as disclosed in Example I of document (4) could not involve an inventive step.

VIII. The Appellants (Patent Proprietors) requested that the decision under appeal be set aside and that the patent be maintained as granted, as main request, or on the basis of one of the sets of claims submitted on 9 November 1998 as first and second auxiliary requests, or as further auxiliary request that the proceedings be adjourned to afford the Appellants an opportunity to respond to allegations of excessive width of claims raised at the oral proceedings.

The Respondents requested that the appeal be dismissed.

IX. At the conclusion of the oral proceedings the Board's decision was pronounced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. After examination of the cited prior art documents, the Board has reached the conclusion that the subject-

matter as defined in the claims as granted is novel. Since novelty was not disputed anymore, it is not necessary to give reasons for this finding.

3. The remaining issue to be dealt with is whether the subject-matter of the claims as granted involves an inventive step.
- 3.1 The Board considers, in agreement with all the parties, that the closest state of the art with respect to the detergent composition according to present Claim 1 is the disclosure of document (4).
- 3.2 Document (4) relates to detergent compositions having improved dye transfer control properties comprising a mixture of a nonionic surfactant and a vinylpyrrolidone polymer (**PVP**), and a builder salt, the weight ratio of nonionic detergent to said polymeric ingredient being from 95:5 to 60:40, the weight ratio of builder salt to total surface-active agent being from 20:1 to 1:5, and the composition containing not more than 10% by weight of anionic surface-active agents based on total surface-active ingredient (see page 1, second and sixth paragraph). These compositions can also comprise carboxymethylcellulose (**CMC**) as follows from the examples. Furthermore, it discloses that water-soluble salts of polymeric aliphatic polycarboxylic acids, such as sodium polyitaconate and sodium polymaleate, are useful builders (see page 4, line 32 to page 5, line 3).
- 3.3 The Appellants submitted with respect to this closest state of the art that compositions according to the patent in suit provided improved fading properties

compared to corresponding compositions of the type as described in document (4) containing CMC and PVP in a weight ratio of 1:1, i.e. the weight ratio used in accordance with the examples.

- 3.3.1 In this context, the patent in suit indicates that coloured fabrics treated with detergent compositions according to the claimed invention remain remarkably bright with no substantial fading being observed (see the examples and in particular page 8, lines 21 to 25).
- 3.3.2 Moreover, the Appellants submitted by referring to their test-reports that the compositions according to the patent in suit provided significantly improved fading properties compared to corresponding compositions of the type as described in document (4) containing CMC and PVP, but no polycarboxylate polymer.
- 3.3.3 Furthermore, the test-report as submitted by Respondent 01 on 15 September 1995, which dealt with dye transfer instead of dye fading, showed that no statistically meaningful difference in dye transfer was observed for compositions according to the claimed invention versus compositions of the type as disclosed in document (4).
- 3.4 In the light of the closest state of the art and these submissions with respect to technical results achieved by the claimed compositions, the Board sees the technical problem underlying the patent in suit as the provision of a detergent composition having an improved dye fading performance, while maintaining satisfying dye transfer properties (see also page 2, lines 46 to 49, and page 8, lines 21 to 25, of the patent in suit).

3.5 The patent in suit suggests, as the solution to this problem, a detergent composition according to Claim 1, which is characterised in that it contains a polymer mixture comprising polymeric materials as defined under (a), (b) and (c) in specific mixing ratios.

3.6 According to the test-reports provided by the Appellants compositions as claimed according to the patent in suit were compared to those of document (4), in particular to compositions comprising PVP and CMC in a weight ratio of 1:1 in accordance with the examples of document (4). The results of these comparative tests showing a significant improvement of the dye fading properties as such, were actually not disputed by the Respondents. Therefore, and in view of the test-report of Respondent 01 showing that the compositions of the patent in suit have similar dye transfer properties compared to those of document (4), the Board considers it credible that the technical problem as defined above has indeed been solved.

3.6.1 In this context, the Respondents objected that the test-reports as submitted by the Appellants did not comprise a comparison to one or more of the examples of compositions as disclosed in document (4). However, according to said test-reports compositions of the claimed invention were compared to compositions as disclosed in document (4) comprising all the essential components as indicated in that document, i.e. a mixture of a nonionic detergent and PVP, and in addition CMC as an optional component (see page 1, lines 36 to 43; page 5, lines 25 and 26, in combination with page 1, lines 22 to 24; the examples; and Claim 1).

Therefore, and having regard to the fact that the improved fading effect achieved by the compositions of the patent in suit compared to those of document (4) was shown to have its origin in the distinguishing feature of the claimed invention, i.e. the mandatory combination of the components (a), (b) and (c), in the Board's judgment, the comparative tests as submitted by the Appellants constitute suitable evidence.

3.6.2 Moreover, the Respondents submitted that there was insufficient proof that the improved fading effect was achieved within the whole scope of the claimed invention, and that therefore the technical problem underlying the patent in suit had to be reformulated as the provision of alternative detergent compositions. In this context, they argued in particular that the compositions as claimed could comprise the mixtures of polymers (a), (b) and (c) in amounts being likely too small for obtaining the alleged effect, and that they also could comprise considerable amounts of anionic surfactants and bleaching agents having a negative effect on fading properties. In order to support this point of view, they referred to document (4) indicating that an amount of 10% by weight, preferably 5% by weight, of the total surfactants represented the maximum quantity of anionic surfactants which could be included without adversely affecting the dye transfer control.

It is true that according to the established case law of the Boards of Appeal as represented by the decisions T 409/91 (OJ EPO 1994, 653) and T 435/91 (OJ EPO 1995, 188) a Claim 1 must comprise the essential features of the invention and that the envisaged effect must be

achieved within the whole scope of the claim. However, the established case law of the Boards of Appeal also holds that the burden of proof in this respect rests on the Opponent(s).

In the present case, the Respondents did not provide any experimental evidence in support of their submissions. Moreover, the Board observes that the passage in document (4) referred to by the Respondents, indicating that acceptable dye transfer properties only would be achieved at restricted amounts of anionic surfactants, relates to compositions containing PVP as the essential dye transfer inhibiting agent instead of compositions containing a combination of three polymers (a), (b) and (c) as defined in Claim 1 of the patent in suit.

Therefore, these submissions as put forward by the Respondents, who carry the burden of proof for the facts they allege, cannot be accepted by the Board because of lack of convincing proof.

- 3.7 The question now is whether the cited documents would have suggested to a person skilled in the art solving the above-defined technical problem in the proposed way.

- 3.8 As indicated above (see point 3.2), document (4) relates to a built detergent composition having improved dye transfer control properties comprising as essential components a mixture of a nonionic surfactant and a homopolymer or copolymer of **PVP** corresponding to the component as defined in Claim 1 of the patent in suit under (b), and **optionally CMC** and/or a water-

soluble salt of a **polymeric aliphatic polycarboxylic acid** corresponding to the components as defined in said Claim 1 under (a) and (c) respectively. However, the carboxymethylcellulose is **used as a soil-suspending agent** and the salt of a polymeric aliphatic polycarboxylic acid represents **one of the numerous indicated suitable builders** (see the examples; page 5, lines 25 and 26, in combination with page 1, lines 21 to 24; and page 4, line 32 to page 5, line 3). Therefore, in the Board's judgment, document (4) does not give any pointer to the skilled person that the specific **combination** of the three components as defined in present Claim 1 of the patent in suit under (a), (b) and (c) would provide a beneficial effect, let alone that the technical problem underlying the patent in suit as defined above could be solved by providing a detergent composition as now claimed.

- 3.9 Document (7) - like document (4) discussed in the preceding paragraph - relates to detergent compositions for coloured fabrics comprising an acylcyanamide salt and a water-soluble organic polymer, whose monomers have more than one amino group, as essential discolouration inhibiting components, **preferably in combination with PVP as an additional discolouration inhibiting agent** (see page 2, lines 27 to 40; and page 6, lines 44 to 48). Moreover, it discloses **numerous suitable builders and redeposition inhibitors** which **could** be used in these compositions, such as citric acid, nitrilotriacetic acid, mellitic acid, carboxymethyloxy succinic acid, **polyacrylic acid**, polymethacrylic acid, poly-alpha-hydroxy-acrylic acid, polymaleic acid and the corresponding copolymers, and

hydroxyethane diphosphonic acid, generally in the form of their salts, **as organic** builders (see page 6, lines 13 to 31, in particular lines 17 to 20), and **carboxymethylated cellulose** or starch in the form of their sodium salts, methyl celluloses and also **polymers and copolymers of acrylic, methacrylic or maleic acids as preferred redeposition inhibitors** (see page 6, lines 41 and 42). Therefore, having regard to the facts that according to document (7) the components corresponding to those as defined in Claim 1 of the patent in suit under (a), (b) and (c) compositions are **optional components**, and that the components corresponding to those as defined under (b) and (c) are **used for purposes which are not related to colour care**, the conclusion of the Board with respect to document (4) also holds for this document.

3.10 The cited documents (1), (2), (3), (5), (8) and (9) are, in the Board's judgment, less relevant because they are not concerned with the existing technical problem of discolouration of washed fabrics as defined above. In this context, the Board notes in particular that:

3.10.1 Document (1) relates to a detergent composition for clothing items **having improved washing power** which contains as essential ingredient a particular bacteria- and/or fungi-derived cellulase (see page 1, lines 46 to 54; and page 2, line 31 to page 3, line 30). The composition may contain **optionally** one or more **builder components** selected from a large group of divalent sequestering agents, alkalis or inorganic electrolytes, including high molecular electrolytes such as

polyacrylic acid and non-dissociating polymers such as **PVP** (see page 12, line 9 to page 13, line 45, in particular page 12, line 24, 40 and 41), or one or more **antiredeposition agents** such as **PVP** and granulated or coated **CMC**, **preferably CMC and/or polyethylene glycol displaying in combination with the particular cellulase a synergism in removing muddy dirt**s (see page 13, line 46 to page 14, line 5). Thus, according to this document all three components as defined in Claim 1 of the patent in suit under (a), (b) and (c) could each be selected from several lists of suitable components and optionally be used for different purposes.

3.10.2 According to document (2), it has been found that the combination of a water-soluble **CMC** soil-suspending agent and a water-soluble **PVP** soil-suspending agent results in **a synergistic improvement in the prevention of soil redeposition** during the washing operation (see column 1, lines 34 to 48; and column 3, lines 38 to 65). Moreover, it is indicated in this document, that it is preferred to use water-soluble builder salts such as polyphosphate salts. However, this document does not give any pointer to the skilled person to use a polycarboxylate polymer as defined under (c) of present Claim 1. Thus, document (2) only proposes the use of a combination of CMC and PVP corresponding to components (a) and (b) as defined in Claim 1 of the patent in suit.

3.10.3 Document (3) discloses detergent compositions containing a **polycarboxylate polymer** falling under the scope of component (c) as defined in Claim 1 of the patent in suit **as a compatibilising agent for**

particular performance additives selected from water-soluble porphine photoactivators (see page 2, lines 39 to 48). It also indicates in a summary of the then existing prior art, that such polycarboxylate polymers were already known as **incrustation inhibitors** or agents to provide an effective oxygen regulation (see page 2, lines 14 to 27). Furthermore, this document discloses that in addition to the essential components, the compositions can also contain a series of supplementary components to complement the performance advantages derived from the compositions. According to the examples such an optional component is e.g. **CMC** (see page 4, lines 11 to 47, in particular line 35; and the examples). Thus, this document discloses compositions comprising a **polycarboxylate polymer** component corresponding to component (c) as defined in present Claim 1 of the patent in suit, and **optionally CMC** corresponding to component (a) of present Claim 1 of the patent in suit. It does not give any pointer to the use of PVP.

3.10.4 Document (5) relates to detergent composition comprising a reduced amount of phosphate builders and a **polycarboxylate polymer** corresponding to component (c) as defined in present Claim 1 **as an effective antiredeposition agent** (see page 2, lines 1 to 9, 24 to 26, and 41 to 46; and page 4, lines 1 to 16). It also indicates that these compositions can contain any of the conventional additives normally used in fabric washing detergent compositions. Among other components **antiredeposition agents such as CMC and PVP** are mentioned (see page 5, lines 18 to 29). Thus, document (5) discloses compositions comprising a polycarboxylate

polymer corresponding to component (c) as claimed in the patent in suit, and **optionally CMC and/or PVP** corresponding to components (a) and (b) as claimed, however for a different purpose.

3.10.5 Document (8) relates to the use of **a (meth)acrylic acid/maleic acid-copolymer falling under the scope of component (c)** as claimed according to the patent in suit as an **incrustation inhibitor** in detergent compositions (see page 2, lines 27 to 35). The test-compositions used to demonstrate the effect of said inhibitor also contain **CMC** (see page 3, the compositions A, B and C). This document does not suggest using PVP.

3.10.6 Document (9) discloses the use of **polyacrylic acid**, i.e. a component corresponding to component (c) as claimed in present Claim 1 of the patent in suit, **as an antiredeposition agent** in amounts which substantially do not provide builder properties (see page 2, lines 26 to 48). It also discloses that these compositions can contain any of the conventional additives normally used in fabric washing detergent compositions, e.g. **CMC** (see page 3, lines 59 to 65). Thus this document, like documents (3) and (8), does not suggest the use of PVP.

3.10.7 Therefore, a person skilled in the art would not have found any hint in these documents how to solve the technical problem underlying the patent in suit.

3.11 The Respondents argued in view of the cited prior art, and having regard to the decision T 513/90, that the use of polycarboxylate polymers as defined in present

Claim 1 under (c) for their well known purposes as builders, antideposition agents or antiincrustation agents in compositions such as disclosed in Example I of document (4) could not involve an inventive step.

In this context, the Board firstly notes that the facts leading to the decision T 513/90 (OJ EPO, 3/1994, 154) are not comparable to those of the present case. According to said decision an ethylene/propylene copolymer, which was generally obtainable on the market, was used in a process for the preparation of foamed products in view of the expectation that the properties of these products would be improved on account of the high polypropylene moiety. Thus the inventive step in that case had to rely on the originality of the process and not on surprising properties of the products (see points 4.3, 4.4 and 4.5 of the Reasons).

Furthermore, the Board notes in this respect that in view of the teaching of the cited documents a skilled person indeed **could** have selected polycarboxylate polymers for said purposes, and also **could** have used the three components as defined in Claim 1 of the patent in suit under (a), (b) and (c) in a detergent composition together. However, according to the consistent case law of the Boards of Appeal for determining lack of inventive step, it is necessary to show that considering the teaching of the relevant prior art as a whole, without using hindsight based on the knowledge of the claimed invention, the skilled person **would** have arrived at the **claimed solution** of the **technical problem to be solved**. However, as indicated above, a skilled person, when trying to solve

the technical problem underlying the patent in suit, i.e. the provision of a detergent composition having an improved dye fading performance, while maintaining satisfying dye transfer properties, would not have found any reason in the state of the art to use the particular three components in combination.

- 3.12 For the above reasons, the Board concludes that the solution of the existing technical problem as claimed in Claim 1 was not obvious in the light of the cited documents. Therefore, the subject-matter of Claim 1 involves an inventive step in the sense of Article 56 EPC. Dependent Claims 2 to 6 are directed to specific embodiments of the compositions of Claim 1, and derive their patentability from that of this independent claim.

Auxiliary requests

4. In the light of the above findings, it is not necessary to consider the Appellants' auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The matter is referred back to the first instance with the order to maintain the patent as granted.

The Registrar:

The Chairman:

E. Görgmaier

P. Krasa