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D E C I S I O N
of 21 March 2002

Case Number: T 0065/98 - 3.3.6

Application Number: 91200662.4

Publication Number: 0451894

IPC: C11D 10/04

Language of the proceedings: EN

Title of invention:

High bulk density granular detergent compositions and process
for preparing them

Patentee:

UNILEVER N.V., et al

Opponent:

Henkel Kommanditgesellschaft auf Aktien
PROCTER & GAMBLE EUROPEAN TECHNICAL CENTER N.V.

Headword:

granular detergent composition/UNILEVER

Relevant legal provisions:

EPC Art. 123(2), 54, 56

Keyword:

"Novelty (yes)"
"Technical problem - no citation being an appropriate starting
point for its definition a formulation in view of the state of
the art as referred to in patent in suit was required"
"Inventive step (yes)"

Decisions cited:

T 0298/93; T 0506/95; T 0644/97

Catchword:

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Case Number: T 0065/98 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 21 March 2002

Appellant: Henkel
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Respondents: UNILEVER N.V.
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 10 December
1997 concerning maintenance of European patent
No. 0 451 894 in amended form.

Composition of the Board:

Chairman: P. Krasa

Members: L. Li Voti
C. Rennie-Smith

Summary of Facts and Submissions

I. The present appeal is from the interlocutory decision of the Opposition Division concerning the maintenance in amended form of the European patent No. 0 451 894 relating to a granular detergent composition having high bulk density.

The above mentioned patent had been granted with a set of 13 claims.

II. Two notices of opposition were filed against the patent, wherein the Appellant (Opponent 01) and Opponent 02 sought revocation of the patent on the grounds of Article 100(a) EPC, in particular because of an alleged lack of novelty and inventive step of the claimed subject-matter.

The oppositions were based inter alia upon the following documents:

(1)= EP-A-0 327 963

(2)= JP-A-02/049099 (German translation)

(3)= EP-A-0 234 818

(4)= EP-A-0 070 192

(8)= Derwent Abstract of EP-A-0 240 356

III. In its decision, the Opposition Division found that the claimed invention and the patent in suit as amended according to the main request fulfilled the patentability requirements of the EPC.

Claim 1 of this main request differed from claim 1 as granted insofar as the wording "**the builder comprising amorphous aluminosilicate or zeolite,**" had been introduced between "by weight of builder," and "at least 50% by weight of said builder..." and the wording "**, the composition containing less than 5% by weight of sodium silicate.**" had been added at the end of the claim.

In particular the Opposition Division found that

- the claimed subject-matter was novel since it was not disclosed clearly and unambiguously in the cited documents;
- the claimed invention amounted to a non-obvious alternative composition of high bulk density, comprising non-phosphate builders and having improved dispensability; therefore it involved an inventive step over the cited prior art.

IV. An appeal was filed against this decision. In the statement of the grounds of appeal the Appellant referred inter alia to document EP-A-0 240 356 (hereinafter referred to as (8')) the abstract of which had already been cited during opposition proceedings.

Opponent 02 did not lodge an appeal and is thus a party as of right to the proceedings in accordance with Article 107 EPC, second sentence.

However, as indicated in its letter of 4 February 2002, Opponent 02 did not attend the oral proceedings which took place before the Board on 21 March 2002.

The Respondents (Patent Proprietors) filed during the written proceedings two auxiliary requests and an amended main request, wherein the wording ", the composition containing less than 5% by weight of sodium silicate." was amended into "**, the composition containing sodium silicate in an amount less than 5% by weight.**"

These requests were further modified during the oral proceedings.

Claim 1 of the main request filed during the oral proceedings has the following wording:

"1. Granular detergent composition or component having a bulk density of at least 600 g/l, comprising from 10 to 70% by weight of a builder, **the builder comprising amorphous alkali metal aluminosilicate or zeolite**, at least 50% by weight of said builder being a non-phosphate material, and from 5 to 45% by weight of a ternary active system comprising one or more nonionic surfactants, anionic surfactants and soap, whereby the weight ratio of the anionic surfactant to the nonionic surfactant is less than 5 : 1 and the amount of soap is from 10 to 90% by weight of the active system, **the composition further containing sodium silicate, the amount of sodium silicate being less than 5% by weight.**" (emphasis added by the Board).

This request also contains claims 2 to 13 with the same wording as the granted claims.

V. The Appellant's arguments, submitted in writing and at the oral proceedings held before the Board, can be

summarized as follows:

- claim 1 contravenes the requirements of Article 123(2) EPC insofar as it requires the obligatory presence of sodium silicate;
- the subject-matter of claim 1 lacks novelty in the light of the teaching of documents (1), (2) or (4);
- the claimed subject-matter is not inventive in the light of the documents (1), (2) and/or (3), also taking into account the teaching of document (8').

With regard to inventive step the Appellant argued in particular that

- it was known from (8') that aluminosilicates interact unfavourably with sodium silicate forming larger particles which disperse slowly in the wash liquor;
- document (1) already disclosed in example 1 a high bulk density granular detergent composition having improved dispensability and differing from the claimed subject-matter only insofar as it contained 5% sodium silicate;
- therefore it would have been obvious to the skilled person in the light of the teaching of (8') to reduce the amount of sodium silicate in the composition of example 1 of document (1);
- document (2) disclosed compositions having high bulk density and good dispensability; a skilled person, following the teaching of (8'), would have

reduced the amount of silicate in the compositions disclosed in the examples of this document or would have alternatively envisaged the addition of only small amounts of sodium silicate to the compositions on page 4 of document (2), compositions with features largely overlapping those of claim 1;

- starting from the teaching of document (3), relating to compositions comprising a carbonate non-phosphate builder and a ternary surfactant system for improving their dispensability, a skilled person would have applied the same surfactant system to alternative compositions of higher bulk density having aluminosilicate builders for achieving the same effect of improved dispensability, the amount of sodium silicate having to be limited for the reasons known from document (8').

VI. The Respondents argued in writing and at the oral proceedings that:

- claim 1 complied with the requirements of Article 123(2) EPC since sodium silicate was disclosed as an optional component in the original description of the application;
- the cited documents did not take away the novelty of the claimed subject-matter since document (1) did not disclose clearly and unambiguously the claimed subject-matter, document (2) did not disclose a composition possessing all the features of that of claim 1 and document (4) did not relate to a granular detergent composition of high bulk

density;

- the problem underlying the present invention was the provision of high bulk density compositions of good dispensability comprising at least 50% by weight of non-phosphate builders and specifically comprising an aluminosilicate builder and small amounts of sodium silicate;
- document (1) did not relate to compositions having an improved dispensability but only an improved dissolution in the laundry liquor;
- moreover, a skilled person would not have reduced the amount of sodium silicate contained in the composition of example 1 of document (1) in view of a potential loss of dispensing characteristics;
- therefore, even though the composition of example 1 of document (1) was very close to the claimed subject-matter, it would not have been obvious to the skilled person to try to modify this composition in order to solve the technical problem in question;
- documents (2) and (8') were not more relevant than document (1) since they did not deal with the problem convincingly solved by the patent in suit;
- document (3) did not relate to compositions both having high bulk density and comprising aluminosilicate builders; therefore a skilled person would not have considered its teaching for solving a problem arising with such granular compositions.

VII. The Appellant requested that the decision under appeal be set aside and the patent be revoked.

The Respondents requested that the patent be maintained on the basis of the main request or according to one of two auxiliary requests, all as filed during the oral proceedings.

VIII. At the end of the oral proceedings, the chairman announced the decision of the Board.

Reasons for the Decision

Main Request

1. *Procedural issues*

The Respondents filed an amended main request during oral proceedings before the Board.

This request differed from that filed previously in writing insofar as the wording "the composition containing sodium silicate in an amount less than 5% by weight" was modified into "**the composition containing sodium silicate, the amount of sodium silicate being less than 5% by weight**" (see point IV above).

This amendment was introduced in order to clarify that sodium silicate must be necessarily present in the claimed composition and to overcome a possible novelty objection. In the Board's view this amendment was easily understandable and amounted to a limitation to the embodiments already encompassed by the original

claims. Moreover this amendment did not lead to a substantial change in the subject-matter of the proceedings or one which the Appellant would have needed much time to consider.

Therefore, the Board finds that this request, even though belated, is admissible.

2. *Article 123(2) EPC*

Compared with claim 1 as granted, claim 1 has been limited by introducing the wording "**the builder comprising amorphous aluminosilicate or zeolite,**" between "by weight of builder," and "at least 50% by weight of said builder..." and the wording "**the composition containing sodium silicate, the amount of sodium silicate being less than 5% by weight**" at the end of the claim.

Both these phrases find support in the application as filed and specifically on page 5, lines 24 and 25 in combination with lines 28 to 30; page 7, lines 27 to 30 and 33 to 36 in combination with line 38.

Therefore, the Board is satisfied that claim 1 complies with the requirements of Articles 123(2) and (3) EPC.

3. *Novelty*

3.1 According to the established jurisprudence of the Boards of Appeal, a prior art disclosure is novelty destroying if, taking into account all a skilled person's common general knowledge at the publication date of the cited document, it discloses directly and

unambiguously the subject-matter in question (see Case Law of the Boards of Appeal of the EPO, 4rd edition, December 2001, page 57, point 2.3).

- 3.2 The subject-matter of claim 1 of the patent in suit is a granular composition having the features outlined in paragraph IV above.

Documents (1), (2) and (4) were cited by the Appellant against the novelty of such subject-matter.

- 3.3 Document (1) discloses in its examples granular compositions having a bulk density greater than 600 g/l, comprising a builder including zeolite in amounts according to the patent in suit, at least 50% by weight of that builder being a non-phosphate material, and a ternary active system comprising nonionic surfactants, anionic surfactants and soap also in amounts according to the patent in suit, the weight ratio of the anionic surfactants to the nonionic surfactants being less than 5 : 1.

This has not been contested by the Appellant.

However, the composition of example 1, which comprises soap in an amount of 14.7% by weight of the active system, comprises 5% by weight of sodium silicate instead of less than 5% as required by the wording of claim 1 of the patent in suit. Examples 2 and 3, on the other hand, though comprising, respectively, 3.5% and 2.5% by weight of sodium silicate, also comprise, respectively, soap in an amount of only 4% and 7.8% by weight of the active surfactant system instead of 10 to 90% as required by the wording of claim 1 of the patent.

In this respect the description of document (1) does not give any supplementary information about the formulation of a suitable granular composition but limits itself to the disclosure of a particular method of preparation of granular detergent compositions of high bulk density without specifying any particular combination of components or suitable concentrations for builders and surfactants.

Therefore this document does not contain any suggestion for modifying the specific compositions of the examples and does not in the Board's view teach directly and unambiguously the use of less than 5% by weight of sodium silicate in combination with the other features of claim 1 of the patent in suit.

- 3.4 Document (2) discloses in example 1 a composition having a density of 680 g/l, comprising 28% by weight of anionic surfactant, 6% nonionic surfactant, 5% soap, 24% zeolite and 8% sodium silicate, which last concentration exceeds the upper limit required for sodium silicate in the disputed claim 1.
- The passage on page 4, lines 15 to 24 of this document describes a range of compositions comprising 25 to 45%, preferably 30 to 40% by weight of alkyl sulfate, 1 to 10%, preferably 2 to 5% of alkyl ethoxylate, 1 to 10%, preferably 2 to 5% soap and 15 to 35%, preferably 20 to 30% zeolite, wherein the amount of surfactants is 30 to 50%, preferably 35 to 45% and the bulk density is preferably 0.6 to 0.8 g/l. Therefore this passage discloses compositions having a bulk density as required in the patent in suit, comprising zeolite as builder and a ternary surfactant system of the type used in the patent in suit in concentrations largely overlapping with those of claim 1. However,

sodium silicate is mentioned in the description only as a possible optional component amongst many others (page 6, line 21) and it is used in the illustrative examples in concentrations above 5% by weight.

Therefore this document does not contain any disclosure of the features of page 4 in combination with an amount of sodium silicate as claimed in the patent in suit.

- 3.5 Finally, document (4) discloses in the example on page 20 the separate addition of various detergent components to a laundry liquor. These components comprise a ternary surfactant mixture of anionic and nonionic surfactants and soap as well as sodium silicate and an additive comprising zeolite. Even though a skilled person could envisage, following the teaching of document (4), to prepare a granular detergent composition comprising all the components listed in the example of page 20, this document does not disclose a granular detergent composition of high bulk density since it suggests preparing the granular detergent compositions by spray-drying as indicated on page 19, lines 15 to 20. It was in fact known in the art that spray-dried granular detergent compositions usually have a bulk density below 600 g/l (see for example document (1), page 2, lines 1 to 3).

Therefore this disclosure also cannot deprive claim 1 of its novelty.

- 3.6 Therefore, the Board considers the subject-matter of claim 1 to be novel.

4. *Inventive step*

4.1 The most suitable starting point to be selected for assessing inventive step of a claimed subject-matter is, according to the jurisprudence of the Boards of Appeal of the EPO, not a document having the most possible number of features in common with the claimed subject-matter but a subject-matter conceived for the same purpose as the claimed invention (see eg T 0298/93, point 2.2.2 of the reasoned decision and T 0506/95, point 4.1 of the reasoned decision, neither published in the OJ EPO).

4.2 As explained in the patent in suit, granular products having a bulk density above 600 g/l and comprising at least 50% of non-phosphate builder have a tendency to cake and to present poor dispensability from the drawer of a washing machine leaving behind substantial amounts of powder residue (page 2, lines 5 to 7 and from page 2, line 56 to page 3, line 3).

The technical problem underlying the claimed invention as defined in the text of the patent in suit was therefore the provision of high bulk density powders with good dispensability, comprising at least 50% by weight of non-phosphate builder (page 3, lines 8 to 10), including an aluminosilicate and containing sodium silicate in an amount of less than 5% by weight (page 4, lines 25 to 29).

The patent claims to have solved this problem by means of the specific ternary mixture of claim 1 and in particular by using anionic and nonionic surfactants in a weight ratio of less than 5:1 and by using soaps in an amount of 10 to 90% by weight of the ternary mixture (page 3, lines 53 to 55). The comparative tests contained in the patent in suit show that compositions

(examples 1a, 1b and 2) according to claim 1 provide almost no residue during dispensing whilst compositions having an insufficient amount of soap (example 4) have poor dispensability.

As agreed by the Respondents, the tests of the patent in suit do not allow a direct comparison of a composition according to the patent in suit with one outside the scope of the claims (example 4) because the tested formulations differ considerably in composition or in their method of preparation. Nevertheless, these tests prove convincingly that compositions according to the claimed invention, which comprise low amounts of sodium silicate, have a very good dispensability. This has not been contested by the Appellant.

The Board has thus no reason to doubt that the subject-matter of claim 1 solved the existing technical problem outlined above.

- 4.3 None of the citations addresses this problem of dispensability of a high bulk density granular detergent composition.
- 4.3.1 Document (1) deals with the preparation of powders of high bulk density by means of an energy saving process, the obtained product having good dissolution properties in the laundry liquor and not leaving behind any residue **after washing** ie in the drum of the washing machine or on the washed textile (page 2, lines 35 to 39; page 4, lines 31 to 33 and page 5, lines 22 to 24). This document, however, does not address the problem of dispensability, ie the ability to be dispensed from the drawer of a washing machine without leaving a residue **in the drawer**. Even though at the

date of document (1) the skilled person knew both of this problem and that consumers wanted easily dispensable powders, this does not necessarily mean that the products of document (1), which deals with a different technical problem, were also formulated for solving the problem dealt with in the patent in suit.

- 4.3.2 Document (2) deals with the reduction of caking during storage of high bulk density granular detergent compositions having a high concentration of surfactant actives and the improvement of their washing power and rinsability but not of their dispensability (page 2, lines 8 to 14 and page 4, lines 1 to 5 and 21 to 24).
- 4.3.3 Document (8') deals with the improvement of the dispersion in the washing liquor of a washing powder of high bulk density comprising aluminosilicate and sodium silicate (page 2, lines 16 to 19 and 26 to 28).
- 4.3.4 Document (3) addresses the problem of dispensability of a washing powder comprising at least 50% of non-phosphate builder (in the present case sodium carbonate) (page 2, lines 25 to 33).

This document refers to a granular detergent composition comprising an alkali metal carbonate, calcite and 5 to 40% by weight of a ternary surfactant system comprising 30 to 70% by weight of anionic surfactants, 20 to 27% of nonionic surfactants and at least 10% of soap (page 2, lines 37 to 46 and 55 to 56). Sodium silicate is optional and can be comprised in an amount of 5 to 10% (page 4, line 17). Aluminosilicates are not cited as possible builders. However, these granular detergent compositions are prepared by spray-drying and thus do not possess high

bulk density (see page 4, lines 34 to 36 and point 3.5 above).

Therefore this document relates to the improvement of the dispensability of granular compositions **of low bulk density and not comprising aluminosilicate.**

- 4.3.5 It is thus the Board's view that none of the documents cited by the Appellant can be used as a reasonable starting point for assessing inventive step of the claimed subject-matter. In fact all of these documents are extraneous to the technical problem convincingly solved by means of the claimed subject-matter and therefore cannot furnish any information which would lead the skilled person to modify the compositions they disclosed or to combine the teaching of one of these documents with the teaching of another in order to solve the technical problem solved by the patent in suit (see also T 644/97, points 2.6.3 and 2.6.4 of the reasons for the decision, not published in OJ EPO).
- 4.3.6 Therefore, the Board accepts that the technical problem is that defined in the patent in suit (see points 4.2 above) in respect to the state of the art also as described therein and consisting of detergent powders displaying high bulk density but poor dispensability (see the paragraph bridging pages 2 and 3).
- 4.4 From the above discussion of the citations, it is clear that they do not contain, either alone or in combination, any hint to the skilled person how to solve the present technical problem.

Consequently, it is the Board's finding that the subject-matter of claim 1 of the main request

necessarily involves an inventive step.

Since the subject-matter of claim 1 involves an inventive step, the subject-matters of claim 8 (a detergent powder comprising the product of claim 1) and claim 9 (the process of preparation of a composition according to claim 1) similarly involve an inventive step.

The same applies to dependent claims 2 to 7 and 10 to 13, respectively.

Since the claims according to the main request have been found to comply with the requirements of the EPC there is no need to deal with the auxiliary requests.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the first instance with the order to maintain the patent on the basis of the claims of the main request and a description to be adapted thereto.

The Registrar:

The Chairman:

G. Rauh

P. Krasa