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**DECISION**  
**of 10 February 2004**

**Case Number:** T 0784/00 - 3.3.6

**Application Number:** 94923685.5

**Publication Number:** 0706560

**IPC:** C11D 17/06

**Language of the proceedings:** EN

**Title of invention:**

Process for the production of a detergent composition

**Patentee:**

UNILEVER PLC, et al

**Opponent:**

The Procter & Gamble Company

**Headword:**

High bulk density detergent composition/UNILEVER

**Relevant legal provisions:**

EPC Art. 54, 56  
EPC R. 71(a)

**Keyword:**

"Novelty (main request and first auxiliary request) - no:  
process feature not distinguishing subject-matter of a product  
claim"

"Novelty (second auxiliary request) - yes"

"Inventive step (second auxiliary request) - no: obvious  
transfer of the technical teaching of a prior art document to  
the process of the closest prior art"

"Admissibility under Rule 71a (third auxiliary request) - no"

**Decisions cited:**

T 0205/83, T 0585/92, T 0382/97

**Catchword:**

-



Case Number: T 0784/00 - 3.3.6

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.6**  
**of 10 February 2004**

**Appellants:**  
(Proprietors of the  
patent)

UNILEVER PLC  
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and

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**Representative:**

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**Respondent:**  
(Opponent)

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**Representative:**

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted 2 June 2000  
revoking European patent No. 0706560 pursuant  
to Article 102(1) EPC.**

**Composition of the Board:**

**Chairman:** P. Krasa  
**Members:** L. Li Voti  
C. Holtz

## Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to revoke European patent No. 0 706 560, relating to a process for the production of a detergent composition having high bulk density.

II. In its notice of opposition the Opponent sought revocation of the patent on the grounds of Article 100(a) EPC, in particular because of lack of novelty and of inventive step of the claimed subject-matter.

The following documents were inter alia cited in support of the opposition:

(3): EP-A-0337523

(5): EP-A-0367339

III. In its decision the Opposition Division found that the subject-matter of claim 7 according to the main request and to the first auxiliary request lacked novelty and that the subject-matter according to the second auxiliary request lacked an inventive step. Furthermore, the third auxiliary request was found not to be admissible under Rule 71(a) EPC.

As regards novelty it found in particular that

- all the product features of the subject-matter of the identical claims 7 of the main and of the first auxiliary request were disclosed in examples 2 and 3 of document (3);

- the subject-matter of these claims 7 was not limited by the indication of the process by which the claimed product could be obtained;
- the Patent Proprietors did not submit any evidence that a process of preparation not involving the spray-drying step used for the compositions of examples 2 and 3 of document (3) would necessarily result in a structurally different product;
- the subject-matter of the said claims 7 lacked thus novelty.

As regards inventive step the Opposition Division found in particular that

- the patent in suit defined the technical problem underlying the claimed invention as the provision of a process for the preparation of a detergent composition having both a high bulk density and improved dispersion properties (dispensing and delivery into the wash) and no significant drawbacks as regards its dissolution properties;
- the tests contained in the patent in suit showed that the compositions comprising a hydrophobic material and prepared by the claimed process had improved dispersion properties but did not convincingly show that the dissolution properties of such compositions had been maintained; test 3 of table 2 was in fact not reliable in this respect;

- a skilled person would have expected that a product having improved dispensing properties would not present a reduced solubility on use;
- document (3) disclosed a zero-phosphate, zeolite built, detergent powder having a bulk density above 550 g/l prepared by a method including the step of spray-drying a slurry containing low levels of a hydrophobic material or of spraying a composition comprising such a hydrophobic material onto the base powder; this document taught that the addition of a hydrophobic material to the slurry improved the dispensing properties of the final product (points B.3.3 and B.4 of the reasons for the decision);
- document (5) suggested the use of a granulation and densification process of the same type as used in the patent in suit for obtaining a zeolite containing detergent powder of high bulk density;
- it was therefore obvious for the skilled person to apply the process of document (5) to a particulate of document (3) comprising a hydrophobic material in order to obtain a product having improved high bulk density and improved dispersion properties.

As regards the third auxiliary request, filed for the first time during oral proceedings, the Opposition Division found that claim 1 of this request differed from that of the second auxiliary request by an additional feature which, however, was not apt to overcome the objections raised by the Opponent;

therefore this request was considered not comply with the requirements of Rule 71(a) EPC.

The independent claims 1 and 7 according to the main request read, respectively, as follows:

"1. Process for the production of a high bulk density detergent composition or component therefor which contains a detergent active compound and a hydrophobic material and which comprises a particulate material which is not the direct product of a spray drying process, the process comprising forming a flowable liquid premix comprising the hydrophobic material and a liquid component, mixing the premix with the particulate material, densifying the mixture of the particulate material and the premix during or subsequent to the said mixing and granulating the said mixture thereby to form a particulate high bulk density detergent composition or component therefor."

"7. A particulate detergent composition or component therefor obtainable by a non-tower process and having a bulk density of at least 700 g/l, comprising a detergent active compound, a detergency builder and a hydrophobic material dispersed substantially uniformly within the particles, wherein a flowable liquid premix of the hydrophobic material and a liquid component is formed and the premix is mixed with the said detergent active compound or builder prior to or whilst the detergent active and builder are mixed whereby a substantially uniform dispersion of the said material within the particles is obtained."

The dependent claims 2 to 6 and 8 to 9 relate to particular embodiments of the process of claim 1 and, respectively, of the product of claim 7.

The first auxiliary request differs from the main request only insofar as the process of claim 1 is specified to be a "non-tower" process.

The second auxiliary request consists of claims 1 to 6 of the main request.

Finally, the third auxiliary request differs from the second auxiliary request insofar as claim 1 specifies that the process relates to the preparation of a product having a bulk density of at least 700 g/l.

IV. An appeal was filed against this decision by the Patent Proprietors.

The Appellants submitted in the statement of the grounds of appeal four requests corresponding to those dealt with in the decision of first instance.

Under cover of a letter dated 19 December 2003 the Appellants withdrew their request for oral proceedings and requested a written decision on the basis of the requests and of the arguments submitted in writing; this request was repeated and confirmed in a fax dated 30 December 2003.

With a fax dated 12 January 2004 the Board informed the parties that oral proceedings had been cancelled.

V. As regards novelty the Appellants submitted that

- the compositions prepared according to examples 2 and 3 of document (3) had necessarily a distinctive microstructure consisting of air voids in a substantially homogeneous matrix because of the spray-drying step used for the preparation of the detergent base comprising the hydrophobic material;
- the microstructure of the particulate compositions of document (3) would not be present in a product prepared by a "non-tower" process as required by the patent in suit, which product would possess few or no air voids at all;
- therefore the subject-matter of claim 7 was novel.

As regards inventive step they submitted that

- the particulate products of document (5) which had been prepared by a "non-tower" process contained only few or no air voids at all and had been prepared by a process requiring lower temperatures than in a spray-drying process;
- a skilled person would thus have expected that the addition of a hydrophobic material during the process of document (5) would result in its distribution not only within the particles as in the process of document (3) but also on their surface;



- moreover, the skilled person would have expected that the addition of a hydrophobic material during the process of document (5) would affect negatively the solubility in water of the final product;
- furthermore, document (3) did not teach that the incorporation of a hydrophobic material would result in the improvement of the dispersion properties of the prepared product without a reduction of its solubility as convincingly shown in the comparative tests of the patent in suit, which were known standard tests used in the specific technical field of the invention;
- it was thus not obvious for the skilled person to transfer the technology of document (3) regarding spray-dried powders to the non-spray dried powders of document (5) and thus to combine the teachings of these two documents;
- therefore the claimed subject-matter involved an inventive step.

As regards the third auxiliary request the Appellants submitted that it was filed in order to address the inventive step objections raised by the Respondent and that, because of the further limitation introduced into claim 1 regarding the bulk density of the particulate detergent composition, it was not obvious to apply the teaching of document (3), relating to spray-dried powders of lower bulk density, for solving the technical problem underlying the patent in suit, concerning particulates of higher bulk density.

VI. The Respondent and Opponent submitted in writing *inter alia* that

- there was no basis in the patent in suit for interpreting the wording "obtainable by a non-tower process" contained in the product claim 7 as implying that the claimed product should possess a particular microstructure;
- no evidence had been submitted that the product of claim 7 had necessarily a structure different from that of the products of examples 2 and 3 of document (3);
- there did not exist any prejudice in the prior art against the use in the process of document (5) of a hydrophobic material, as suggested in document (3); in particular, the Appellants had not brought any evidence that a skilled person would have expected that the incorporation of a hydrophobic material in the non-tower process disclosed in document (5) would result in its distribution not only within but also outside the particles and in the reduction of the solubility of the obtained granulate;
- the skilled person would thus have tried to add a hydrophobic material as suggested in document (3) during the process of document (5) in order to improve the dispersion properties of those high bulk density products.

VII. The Appellants request that the decision under appeal be set aside and that the patent be maintained on the basis of any of the main request or first, second or third auxiliary request, all of them filed with the statement of the grounds of appeal.

The Respondent requests that the appeal be dismissed.

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

## **Reasons for the Decision**

1. *Main request*

1.1 Novelty

1.1.1 The subject-matter of claim 7 relates to a particulate detergent composition characterized by product features and by some process features, in particular, by being "obtainable by a non-tower process" (see point III above).

It is established jurisprudence of the Boards of Appeal of the EPO that a claimed product characterized by its process of preparation must comply per se with the requirements of novelty and that the process features used for characterizing further the claimed product have not to be considered as limiting unless they necessarily provide the product with features which it would not possess by a different process of preparation (see e.g. 0205/83, OJ EPO 85, 363, points 3.1 and 3.2.1 of the reasons for the decision).

1.1.2 It is not disputed in the present case that examples 2 and 3 of document (3) disclose a particulate detergent composition having a bulk density above 700 g/l and comprising detergent actives, builders, a liquid component such as a nonionic surfactant and a hydrophobic material dispersed uniformly within the particles (see page 6, lines 1 to 41).

The only issue to be discussed is therefore whether the wording "obtainable by a non-tower process" distinguishes the claimed subject-matter from the products of these examples.

1.1.3 The Appellants have submitted that the products of document (3), having been prepared in a first step by spray-drying a slurry comprising the hydrophobic material, necessarily possess a distinctive microstructure comprising air voids, which is characteristic of products formed by a spray-drying process. Conversely, the subject-matter of claim 7 of the patent in suit, being obtainable by a "non-tower" process, should necessarily contain few or no voids and thus have a different microstructure than that of the products of document (3) (see point V above).

1.1.4 The Board notes that the wording "obtainable by a non-tower process" in claim 7 regards the whole process of preparation and not only a step of the process and thus it does not identify a process including a spray-drying step as that of document (3).

It is not contested that the step of spray-drying a detergent slurry leads usually to powders having a lower bulk density than that required in claim 7 and that this is due to the fact that air voids are formed within the particles. Therefore particles prepared by spray-drying would in principle be highly porous, as also explained in document (3) (page 3, lines 21 to 24), contain more air voids and have a lower bulk density than particles prepared by a "non-tower" process.

However, the Board finds that the particles prepared by spray-drying and post-dosing in examples 2 and 3 of document (3) cannot be considered to be conventional spray-dried products, since they have a very high bulk density within the range of claim 7 of the patent in suit. This is due, as explained in that document, to the presence in the spray-drying step of a hydrophobic material in combination with an anionic surfactant (see page 3, lines 24 to 26 and page 4, lines 21 to 23).

Since, in the present case, the patent in suit was revoked by the Opposition Division, the burden of proof to demonstrate that the reasons for revoking the patent were not justified rests on the Appellants (see also T 585/92, point 3.2 of the reasons for the decision, not published in the OJ EPO).

Therefore, the Board cannot accept, in the absence of any evidence, the Appellants' statement that the structure of the claimed product has to be necessarily different from that of the products of document (3) (see also the first instance decision, points I.4 and I.4.4 of the reasons for the decision).

The Board concludes therefore that the products of examples 2 and 3 do not possess the typical microstructure of conventional spray-dried products and, because of their high bulk density, must possess a structure similar to that obtainable by a "non-tower" process leading to the same bulk density.

Therefore, the wording "obtainable by a non-tower process" does not distinguish the claimed subject-matter from the products of examples 2 and 3 of document (3) and the subject-matter of claim 7 lacks therefore novelty.

2. *First auxiliary request.*

Since claim 7 of this request is identical to claim 7 of the main request, this request has to be rejected for the same reasons put forward in point 1.1.4 above.

3. *Second auxiliary request*

3.1 Novelty

3.1.1 Claim 1 of this request relates to a process for the preparation of a high bulk density detergent composition or component comprising a detergent active compound and a hydrophobic material including the process steps of forming a liquid premix of the hydrophobic material and a liquid component, mixing the premix with a particulate material which is not the direct product of a spray-drying process and densifying and granulating this mixture.

Moreover, this set of claims does not contain the product claims comprised in the sets of claims according to the main and first auxiliary requests.

- 3.1.2 The Board agrees with the conclusions of the Opposition Division in regard to novelty of this subject-matter (see point II.A of the reasons for the decision).

Since this request fails on other grounds there is no need to give further details.

### 3.2 Inventive step

- 3.2.1 The present invention and in particular claim 1 relates to a process for the preparation of a powder of high bulk density by a process not involving a spray-drying step, i.e. by a "non-tower" process (see page 2, lines 3 to 4 and 38 to 44 and point 3.1.1 above).

As explained in the patent in suit, the preparation of particulate detergent compositions having a high bulk density, e.g. greater than 700 g/l, was already known in the prior art, e.g. from document (5) (see page 2, lines 25 to 30); it was thus desirable to improve the dissolution properties of this type of particulate detergent compositions (page 2, lines 31 to 33). The patent in suit thus defines the technical problem underlying the present invention as the improvement of the dispersion properties, i.e. the dispensability in the wash, of such products without a reduction of their solubility (see page 2, lines 31 to 37 and page 3, lines 9 to 12).

3.2.2 Inventive step was discussed by both parties by considering both documents (3) and (5).

Document (3) regards the preparation of particulate detergent compositions by spray-drying and post-dosing and not by a "non-tower" process as required by claim 1 as already explained in points 1.1.3 and 1.1.4 above). The Board thus finds that this document cannot qualify as the most reasonable starting point for the evaluation of inventive step.

Conversely, document (5), already referred to as prior art in the description of the patent in suit, deals with the preparation of particulate detergent compositions having a high bulk density by means of a process involving densification and granulation of a particulate, i.e. involving similar process steps as the process of the attacked claim 1 (see page 2, lines 3 to 4 and page 3, lines 40 to 47). Therefore the Board selects this document as the most reasonable starting point for evaluating inventive step.

The process disclosed in document (5) differs from that of the patent in suit only insofar as a hydrophobic material is not incorporated into the mixture to be densified and granulated. This has not been disputed by the Appellants.

The technical problem underlying the claimed invention, seen in the light of the teaching of document (5) is therefore that defined in the patent in suit (see point 3.2.1 above)



3.2.3 As regards the criticism raised by the Opposition Division against test 3 of table 2 of the patent in suit, which regards the visual assessment of insoluble residues left after a wash cycle in order to evaluate the solubility of the particulate detergent composition under use conditions, the Board agrees with the Appellants that this test is a standard one used in the specific technical field and that it shows that the compositions prepared according to the patent in suit and comprising a hydrophobic material have at least not a greater tendency to form lumps in water under use conditions than compositions not comprising such a hydrophobic material. Therefore this test is apt to show that the solubility of a detergent composition prepared as in the patent in suit is not affected by the presence of the hydrophobic material.

The Board is therefore satisfied, in the light of the comparative tests contained in the patent in suit, that the technical problem defined in the patent in suit has been convincingly solved.

The only question to be answered in order to assess the inventiveness of the claimed subject-matter is therefore whether the skilled person, at the priority date of the patent in suit, would have added a hydrophobic material into a mixture to be densified and granulated as described in document (5) in order to solve the technical problem mentioned above.

3.2.4 It was known from document (3) that the incorporation of small amounts of a hydrophobic material during preparation of a zero-phosphate detergent composition containing an anionic surfactant brings about an improvement of the dispensing properties of the final high bulk density product (see page 2, lines 20 to 24; page 3, lines 7 to 9; page 4, lines 21 to 23). Therefore, even though this document relates to particulate detergent compositions prepared by spray-drying and post-dosing (see points 1.1.2 to 1.1.4 above) its teaching consists in the incorporation of small amounts of a hydrophobic material into a base powder in a homogeneously distributed form in order to improve the dispensing properties and thus the dispersion properties into the wash of a particulate detergent composition of high bulk density.

Therefore, the skilled person, faced with the technical problem mentioned above, would have tried to apply this technical teaching also to the products of document (5), e.g. by incorporating the hydrophobic material in the starting mixture to be densified and granulated, in order to distribute the hydrophobic material homogeneously within the particles and bring about an improvement of their dispersion properties.

3.2.5 The Appellants have argued that the skilled person would not have transferred the teaching of document (3) relating to spray-dried products to the "non-tower" process of document (5), since he would have expected the hydrophobic material to distribute not only within, but also outside of the final product and thus to reduce its solubility. This had to be expected as a consequence of the substantial absence of air voids

within a product prepared by a "non tower" process and of the lower temperatures used in such a process. The Appellants have, however, not brought any evidence in support of their allegations which were contested by the Respondent.

According to the process of document (5) the starting particulate material is, in a first step, thoroughly mixed with the liquids added to this stage and brought into or maintained in a deformable state in a high-speed mixer/densifier so that its porosity is reduced and, in a second step, granulated in a moderate-speed mixer densifier maintaining such a deformable state (see page 4, lines 45 to page 5, line 4 and page 5, lines 15 to 19). The temperatures used in this process are of e.g. between 50 and 60 °C as shown in the examples, i.e. at the melting point of the hydrophobic material preferably used in document (3) (see page 3, lines 54 to 55).

Therefore in the Board's view a skilled person would have expected all components of a detergent composition prepared according to the process of document (5) to be necessarily homogeneously distributed within the particulate detergent composition and that he had no reason to expect that the addition of small amounts of a hydrophobic material as suggested in document (3), e.g. 0.1 % by weight (see page 3, line 47), in the first step of such a process, would on the contrary result in their inhomogeneous distribution within and outside the particles.

Finally, since the final product would be expected to have better dispersion properties into the wash in the light of the teaching of document (3) and the used amounts of hydrophobic material had to be small, the skilled person would have had no reason to expect a reduced solubility of such a product under wash conditions.

The Board cannot therefore agree with the Appellants' statements.

- 3.2.6 The Board concludes therefore that the subject-matter of claim 1 according to the second auxiliary request does not amount to an inventive step.

4. *Third auxiliary request*

- 4.1 Claim 1 of this request differs from claim 1 of the second auxiliary request only insofar as the bulk density of the final product has been specified to be above 700 g/l.

This request was not accepted by the first instance under Rule 71(a) EPC since it had been filed for the first time during oral proceedings of 10 May 2000 and the amendment to claim 1 was at first sight not apt to overcome the inventive step objections raised by the Respondent.

The Board also remarks that the Opposition Division's summons to attend oral proceedings indicated a final date of 10 April 2000 for making written submissions and/or amendments.

4.2 As argued by the Appellants in their letter dated 19 December 2003 and acknowledged in the first instance decision (point III.3 of the reasons for the decision), this request had been filed before the first instance in order to address at least the inventive step objections raised by the Respondent.

In the Appellants' view, because of the further limitation introduced into claim 1 regarding the bulk density of the particulate detergent composition, it was not obvious to apply the teaching of document (3), relating to spray-dried powders of lower bulk density to the process of document (5), for solving the technical problem underlying the patent in suit, concerning particulates of higher bulk density.

However, as explained in points 1.1.2 to 1.1.4 above, the particulate detergent products prepared according to document (3) are not conventional spray-dried powders but can possess a very high bulk density of greater than 700 g/l (see examples 2 and 3 reporting values of 755 g/l and of 724 g/l, respectively). Therefore, the amendment to claim 1 cannot distinguish further the claimed subject-matter neither from the products of document (3) nor from those of document (5), which also possess such a high bulk density (see e.g. document (5), tables 5 and 10 reporting one product having a bulk density of 664 Kg/m<sup>3</sup>, i.e. 664 g/l, and ten products with bulk densities between 720 and 907 Kg/m<sup>3</sup>).

The Board concludes that the Opposition Division was right in deciding that this request, filed without excuse after the time limit indicated in the summons to oral proceedings, was at first sight not apt to overcome the inventive step objections raised by the Respondent against the second auxiliary request and had to be dismissed under Rule 71(a) EPC (see T 382/97, not published in OJ EPO, points 6.5 to 6.7 of the reasons for the decision).

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa