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File No.: T 0332/91 - 3.3.1  
Application No.: 82 200 887.6  
Publication No.: 0 070 079  
Classification: C11D 3/395  
Title of invention: Cleaning composition

**D E C I S I O N**  
of 27 April 1993

Applicant:

Proprietor of the patent: UNILEVER N.V., et al

Opponent: 01) Henkel Kommanditgesellschaft auf Aktien  
02) BASF Aktiengesellschaft, Ludwigshafen

Headword: Detergent composition/UNILEVER

**EPC:** Art. 54(3) and 56

Keyword: "Novelty (yes)" - "Inventive step (no); obvious selection of amounts"

**Headnote**  
**Catchwords**



Case Number: T 0332/91 - 3.3.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.1**  
**of 27 April 1993**

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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office issued orally on  
31 January 1991, with written reasons issued on  
8 March 1991, concerning maintenance of European  
patent No. 0 070 079 in amended form.

**Composition of the Board:**

**Chairman:** R.W. Andrews  
**Members:** J.M. Jonk  
J.A. Stephens-Ofner

### Summary of Facts and Submissions

I. The grant of European patent No. 0 070 079 in respect of European patent application No. 82 200 887.6 was announced on 19 April 1989 (cf. Bulletin 89/16).

II. Notices of opposition were filed on 15 January 1990 by Henkel KGaA (Opponent O1) and 17 January 1990 by BASF AG (Opponent O2), requesting the revocation of the patent on the ground of lack of inventive step. The oppositions were supported by six documents of which only

- (1) "Phosphatreduktion und Inkrustierung", Tenside Detergents 18 (1981) 5, pages 239 to 242,
- (2) DE-B-2 544 019, and
- (6) DE-A-2 741 680

are relevant to this decision.

III. By a decision issued orally on 31 January 1991, with the corresponding interlocutory decision being issued on 8 March 1991, the Opposition Division maintained the patent in suit on the basis of Claims 1 to 4 filed on 9 July 1990, Claim 1 reading as follows:

"A low phosphate, alumino-silicate built cleaning composition comprising, besides less than 12.5% by weight of an inorganic phosphate builder,

- (a) from 15 to 50% by weight of a water-insoluble alumino-silicate cation exchange material;
- (b) from 3 to 30% by weight of a peroxide bleach;
- (c) from 0.5 to 15% by weight of an activator for said peroxide bleach; and
- (d) a nitrilotriacetic acid having a structural formula of  $N(\text{CH}_2\text{COOX})_3$ , wherein X is hydrogen or a water soluble cation compound, characterized in that it

comprises from 1 to 10% by weight of said nitrilotriacetic acid compound, wherein the percentage quantities of (a)+2(d) is between 40 and 55."

Dependent Claim 4 related to a composition according to Claim 1, characterised in that it was free or substantially free of inorganic phosphate builders.

The Opposition Division held that the subject-matter of the claims was novel and involved an inventive step. The technical problem underlying the present invention was to improve the bleaching performance of alumino-silicate built detergent compositions, particularly, at lower washing temperatures. Therefore, the detergent compositions suitable for washing at low temperatures as described in

(7) FR-A-2 335 594,

which was mentioned in the patent in suit, represented the closest state of the art. The present compositions differed from these known compositions only in the selection of the specific amount of the nitrilotriacetic acid compound (NTA) and in the selection of the weight ratio of this compound to the amount of alumino-silicate. Document (7), as well as the documents cited by the Opponents during the opposition proceedings did not give any suggestion that these particular features could lead to an improvement in the bleaching performance of alumino-silicate built detergent compositions at low washing temperatures.

IV. An appeal was lodged against this decision on 30 March 1991 by the Opponent (O1), and the appeal fee was paid on the same date.

A Statement of Grounds of Appeal was submitted on 20 June 1991.

V. In this Statement and during the oral proceedings held on 27 April 1993, the Appellant argued that the subject-matter of Claim 1 lacked novelty in the light of the disclosure of document (2), particularly Example 21, Experiment II(a), in combination with the statement in the description that the washing effect could be improved by the addition of, *inter alia*, an activator. The Appellant admitted, however, that the amount of activator as claimed was not explicitly disclosed in this document, but argued that the skilled person reading the document in the light of his common general knowledge, would have immediately understood that the claimed amounts were those normally used. Moreover, the Appellant contended that, even if the novelty of the present composition was upheld, the compositions according to the present patent still did not involve an inventive step for the reason that the selection of the claimed amounts of activator would have been trivial to the skilled person.

If document (7) was regarded as the closest state of the art, the selection of the amount of NTA and the claimed ratio of NTA to alumino-silicate would have been obvious in the light of the disclosure of documents (1) and (2). The use of washing temperatures of up to 90°C in accordance with the examples of these two documents corresponded to the severe test conditions normally used for testing the secondary bleaching performance of builder systems (because it was commonly known that calcium carbonate was less soluble in water at higher temperatures). Therefore, the skilled person would not have concluded from the use of such high temperatures during these tests that the compositions as described therein could be used only as boil-wash compositions.

In addition, the Appellant disputed that the present compositions provided an improved bleaching performance.

With respect to the subject-matter of Claim 4 indicated above the Appellant argued that the relative term "substantially" would render this claim unclear, contrary to the provisions of Article 84 EPC. Regarding the subject-matter of Claim 4, the disclosure of document (2) would again represent the closest state of the art because it was indicated in this document that the phosphate builder could be omitted. In addition, the Appellant pointed out that, according to document (1), a composition comprising an alumino-silicate and NTA, but no phosphate builder, showed the best whiteness performance. Consequently, the compositions according to present Claim 4 also did not involve an inventive step.

VI. In their letter filed on 6 February 1993, the Respondents stated that they would not be represented at the oral proceedings. In their earlier written reply to the Statement of Grounds of Appeal the Respondents fully agreed with the Opposition Division that document (7), which related to compositions comprising an alumino-silicate (e.g. a zeolite), a nitrilotriacetic acid compound (NTA), a peroxide bleach and, optionally, an activator (peroxide bleach precursor), represented the nearest state of the art. The Respondents contended that the invention lay in the discovery that the significant improvement in the bleaching performance shown in the examples of the disputed patent could only be achieved if the NTA and the zeolite were present in the claimed amounts and ratios. This was surprising and could not be derived from the cited documents.

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

The Respondents requested that the appeal be dismissed. Alternatively, they requested the maintenance of the patent on the basis of Claim 1 combined with Claim 4.

VIII. At the conclusion of the oral proceedings, the Board's decision to revoke the patent was announced.

### **Reasons for the decision**

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. *Main request*

2.1 Amendments under Article 123 EPC

Claim 1 of the main request differs from Claim 1 as granted in that the upper limit for the amount of the nitrilotriacetic acid compound (NTA) present in the composition is reduced from 15% to 10% by weight. This feature was disclosed in the application as originally filed (cf. page 10, lines 1 to 3) and the patent specification as granted (cf. page 4, lines 55 and 56). Claims 2 to 4 are identical with the respective claims as granted, and with the Claims 3, 4 and 9 as filed. Thus, all claims of the main request comply with the requirements of Article 123 EPC.

2.2 Novelty

The Appellant disputed the novelty of the subject-matter of present Claim 1 with respect to the disclosure of document (2) in line with the earlier decision of this Board T 666/89 (headnote published in OJ EPO 6/1992)

according to which it was necessary to consider the whole content of a citation, i.e. its express and implicit technical teaching, when deciding the question of novelty. Although the Appellant admitted that the amount of the activator as claimed was not explicitly disclosed in this document, he contended that the skilled addressee, reading the document in the light of his common general knowledge, would have immediately understood that the claimed amounts were those normally used. However, the Appellant, on whom the burden of proof rests on this issue (cf. for instance T 219/83, OJ EPO 1986, 211), did not provide any evidence that the amounts of activator as claimed would have been usual in detergent compositions of the present type. In these circumstances, the Board rejects Appellant's allegation of lack of novelty.

Accordingly, in the Board's judgment, the subject-matter of the claims of the main request is novel.

## 2.3 Inventive step

### 2.3.1 Closest state of the art

The Appellant disputed the Opposition Division's view that document (7), referred to in the patent in suit, represented the closest state of the art. He argued that document (2) was the most relevant prior art.

Initially, the Board observes that, according to the established jurisprudence of the Boards of Appeal, when deciding what information has been made available by a document, consideration should not be confined to the examples contained in it but should extend to the document as a whole. This means that the technical teaching of the examples may be combined with that disclosed elsewhere in the same document.



Document (2), in common with the patent in suit, is concerned with the problem of improving the bleaching performance of detergent compositions which comprise a low content of a phosphate builders, or which are completely free from such builders (cf. particularly column 5, lines 6 to 13, of document (2) and page 2, lines 5 to 10, and the examples of the disputed patent). Furthermore, in this document the results of washing tests are only supported for two compositions, namely compositions I(a) and II(a) (see Example 21, particularly Table 3). The composition II(a) which comprises 25% by weight of an alumino-silicate builder, 26.5% by weight of sodium perborate, 10% by weight of NTA (providing a value of (a)+2(b) of 45) and 2.5% of an alkali metal silicate falls fully within the ambit of the generally specified compositions referred to in column 3, line 54 to column 5, line 5 and, in the Board's judgment, is clearly representative of the general teaching of document (2). In addition, this document also discloses that the washing effect can be further improved by the addition of other constituents usually present in detergent compositions such as an activator for the bleaching compound (cf. column 7, lines 18 to 25). Consequently, the disclosure of document (2) as a whole makes available to the skilled person detergent compositions which only differ from the compositions as claimed in that the amount of the activator is not specified.

Document (7) relates to non-phosphate heavy duty laundry detergent compositions which, due to their particular composition, have soil removal properties comparable to those of similar compositions wherein pentasodium triphosphate is employed as builder salt (cf. page 1, lines 1 to 16). The compositions comprise an alumino-silicate and a peroxide bleaching agent as essential constituents (cf. page 1, lines 16 to 23), but TNA and

an activator for the peroxide bleaching compound are only optional components (cf. page 6, lines 22 to 25, and page 9, lines 2 to 7). Moreover, this document does not give any information regarding the amounts of these two optional constituents, let alone about the ratio of NTA to the alumino-silicate.

Therefore, the Board agrees with Appellant's submission that document (2), which not only concerns the same technical problem as the patent in suit, but also has the most technical features in common, is the closest state of the art.

### 2.3.2 Problem and solution

The Respondents have argued that the examples of the disputed patent demonstrate that the claimed compositions surprisingly have an improved bleaching performance.

However, in these examples the comparisons have not been made with a composition of the closest state of the art as represented by document (2) comprising NTA in an amount and in a ratio with respect to the alumino-silicate as claimed.

Consequently, the advantage referred to by the Respondents cannot be taken into consideration for determining the technical problem underlying the subject-matter of the present Claim 1 and, therefore, for the assessment of inventive step.

In the Board's judgment, the technical problem underlying the disputed patent in the light of the closest state as represented by document (2) is the provision of further low phosphate (i.e. below 12.5% by weight) detergent compositions comprising

water-insoluble alumino-silicates, peroxide bleaches, activators for said peroxide bleaches, and NTA, which, nevertheless, have satisfactory bleaching performances.

According to Claim 1 this problem is solved by compositions of the above type containing the activator in an amount of 0.5 to 15% by weight.

In view of the examples in the present patent, the Board is satisfied that the above technical problem is solved.

### 2.3.3 Inventiveness of the solution of the technical problem

As mentioned above (section 2.3.1, third paragraph), document (2) discloses all the technical features of the claimed compositions, with the exception of the amount of the activator. Thus, the question is whether, in the light of the prior art, the selection of the amount of the bleach activator involves an inventive step.

As indicated in the specification of the patent in suit, it was well known that the bleaching performance of detergent compositions containing a peroxide bleaching compound, such as sodium perborate, could be improved at lower washing temperatures by the use of an activator for the peroxide compound (cf. page 2, lines 5 to 7, and page 3, lines 33 to 36).

Moreover, on the basis of its own technical knowledge, the Board also finds that the use of activators in the claimed amounts was well known at the claimed priority date of the disputed patent. This finding is confirmed, for instance, by the disclosure of document (6). This document relates to granular laundry compositions comprising peroxide/activator bleaching systems which are suitable for use at low washing temperatures. These prior art compositions comprise water-insoluble

alumino-silicates and, optionally, other builders (cf. page 7, 1st and 2nd complete paragraphs, and page 21, lines 19 to 23). These bleaching systems, which consist essentially of a peroxide compound and an activator and are particularly effective at washing temperatures of 25 to 70°C, comprise the peroxide compound in an amount of 3 to 30 parts by weight and the activator in an amount of 1 to 20 parts by weight, i.e. weight ranges which are substantially identical with the ranges as claimed (cf. the paragraph bridging pages 7 and 8, and the second complete paragraph of page 7).

2.3.4 From the above considerations the Board concludes that the solution of the technical problem as defined above was obvious to the skilled person. Therefore, the subject-matter of Claim 1 of the main request does not involve an inventive step.

3. *Auxiliary request*

3.1 Claim 1 according to this request corresponds to Claim 1 of the main request, except that its subject-matter is restricted to compositions which are free or substantially free of inorganic phosphate builders, i.e. the subject-matter of Claim 4 of the main request.

3.2 Amendments under Article 123 EPC

Since the requirement that the compositions are free or substantially free of inorganic phosphate builders was the subject-matter of the Claim 4 as granted and of Claim 9 as filed, there are no objections to this Claim under Article 123 EPC.

With respect to Claim 1 of the auxiliary request, the Board cannot accept the Appellants submission that it does not satisfy the requirement of Article 84 EPC with

respect to clarity. In the Board's judgment, the expression "substantially free of inorganic phosphate builder", in its present context and in the light of the disclosure of the patent in suit (cf. page 2, lines 9 and 10, and page 4, lines 57 and 58), is to be construed as encompassing those compositions in which the only phosphate present are the extremely minor amounts introduced by way of impurities present in the other constituents of the compositions.

### 3.3 Novelty

The compositions according to present Claim 1 are novel because - as indicated above for the subject-matter of Claim 1 of the main request - they differ from those as described in document (2) in that they contain the activator in the specific amount of 0.5 to 15% by weight.

### 3.4 Inventive step

#### 3.4.1 Document (2) also discloses that the phosphates in the compositions described therein can be fully replaced by an alkali metal carbonate or an alkali metal silicate (cf. column 3, lines 54 to 64, and column 4, line 53 to column 5, line 13).

According to the disputed patent, it may also be desirable to include in the compositions thereof an alkali metal silicate, preferable in an amount of from about 5% to about 15% by weight of the composition (cf. page 5, lines 14 to 18).

Therefore, in the Board's judgment, document (2) again represents the closest state of the art.

3.4.2 As in the case of the main request, the Respondents did not provide any evidence that the present compositions show an improved bleaching performance compared with the compositions of the closest state of the art.

As a consequence, in the Board's judgment, the technical problem underlying the subject-matter of the present Claim 1 is the provision of further phosphate-free detergent compositions comprising alumino-silicates, peroxide bleaching compounds, activators for these bleaching compounds and nitrilotriacetic acid compounds which have a satisfactory bleaching performance.

3.4.3 According to the Claim 1 of the auxiliary request, this problem is essentially solved by the use of the constituents in the proportions as claimed. In the light of the examples of the patent in suit the Board is satisfied that this technical problem is indeed solved.

3.4.4 Therefore, the question is whether the selection of the proportions of the constituents as claimed involves an inventive step in the light of the cited prior art.

3.4.5 As indicated in section 2.3.1, paragraph 3, above, document (2) discloses a detergent composition which is representative for the general teaching of this document, comprising 25% by weight of an alumino-silicate, 5% by weight of a phosphate builder, 10% by weight of NTA and 2.5% by weight of an alkali metal silicate (cf. Example 21, particularly Table 3, Experiment IIa). Furthermore, it is indicated in this document that the phosphate builder can be fully replaced by an alkali metal silicate or an alkali metal carbonate (cf. column 4, line 38 to column 5, line 13, and particularly column 4, lines 53 to 56 in combination the definition of "Waschalkalien" in column 4, lines 14 to 16). Therefore, in the Board's judgment, the skilled

person faced with the problem of providing a phosphate-free detergent composition had a clear incentive to start from the composition of Example 21, Experiment II(a), namely the only example involving the testing of a composition having a low phosphate content, and to replace the phosphate builder by a corresponding amount of the alkali metal silicate (up to 8.2% by weight). The composition so obtained fully corresponds to the composition claimed according to the auxiliary request except that there is no activator present. However, as has been explained before when dealing with Claim 1 of the main request, in the Board's judgment, the use of an activator in an amount of 0.5 to 15% by weight does not involve an inventive step.

3.4.6 In addition, the Board observes that a builder system on the basis of an alumino-silicate and NTA, i.e. a builder system which does not contain a phosphate builder, was known from document (1), (cf. page 239, first paragraph). Moreover, this document discloses that test material washed with a detergent composition comprising such a builder system and sodium perborate, namely composition H (cf. Tables 3 and 4 on page 240), had the lowest ash value, i.e. the least greyness, of the builder systems tested, including a system consisting of an alumino-silicate, NTA and a phosphate (cf. particularly page 241, left column, first paragraph). Therefore, this document, in combination with the teaching of documents (2) and (7), also provides a clear pointer to the proposed solution to the technical problem as defined above.

3.4.7 From the above considerations, the Board concludes that the subject-matter of Claim 1 according to the auxiliary request does not involve an inventive step.

Dependent Claims 2 and 3 fall with Claim 1.

Order


For these reasons, it is decided that:

The patent is revoked.

The Registrar:

  
E. Gorgmaier

The Chairman:

  
R. Andrews