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D E C I S I O N
of 17 December 2002

Case Number: T 0701/98 - 3.3.6

Application Number: 91917950.7

Publication Number: 0551375

IPC: C11D 1/52

Language of the proceedings: EN

Title of invention:

Polyhydroxy fatty acid amides in zeolite/layered silicate
built detergents

Patentee:

THE PROCTER & GAMBLE COMPANY

Opponent:

UNILEVER PLC / UNILEVER NV

Headword:

Built detergents/PROCTER & GAMBLE

Relevant legal provisions:

EPC Art. 114(2), 56

Keyword:

"Late-filed document not admitted"

"Inventive step (yes) - non obvious technical effect"

Decisions cited:

T 0495/91, T 0881/92, T 0184/82

Catchword:

-



Case Number: T 0701/98 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 17 December 2002

Appellants
(Opponents)

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Respondent:
(Proprietor of the patent)

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Representative:

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Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office posted 18 May 1998
concerning maintenance of European patent No. 0
551 375 in amended form.

Composition of the Board:

Chairman: P. Krasa
Members: P. Ammendola
C. Rennie-Smith

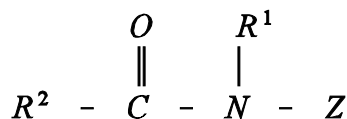
Summary of Facts of Submissions

I. This appeal is from an interlocutory decision of the Opposition Division concerning the maintenance of European patent No. 0 551 375 in amended form on the basis of the first auxiliary request submitted during oral proceedings held before the Opposition Division on 28 April 1998. The patent is directed to built detergent compositions comprising polyhydroxy fatty acid amide (hereafter "PFA") and zeolite.

II. Independent claims 1 and 11 as amended read as follows:

"1. A built detergent composition, comprising one or more anionic, nonionic or cationic deterative surfactants, or mixtures thereof, optional deterative adjuncts, and optional auxiliary builders, said composition characterized in that it comprises:

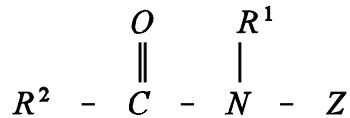
- (a) at least 1% by weight of a zeolite detergency builder; and*
- (b) at least 1% by weight of a polyhydroxy fatty acid amide material of the formula*



wherein R¹ is H, C₁-C₄ hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl, or a mixture thereof, R² is C₇-C₁₉ alkyl or alkenyl and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl with at least 3 hydroxyls directly connected to said chain, or an alkoxyated derivative thereof."

"11. A method for improving the fabric cleaning performance of a detergent composition comprising one or more anionic, nonionic, or cationic surfactants, or mixtures thereof; zeolite builder; optional detergent

adjuncts, and optional auxiliary builder; said method being characterized in that it comprises incorporating into said detergent composition at least 1% by weight of a polyhydroxy fatty acid amide material of the formula



wherein R^1 is H, C_1 - C_4 hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl, or a mixture thereof, R^2 is straight chain C_7 - C_{19} alkyl or alkenyl and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl with at least 3 hydroxyls, preferably C_{11} - C_{17} N-methyl glucamide, C_{11} - C_{17} N-methyl maltamide, or mixtures of said glucamide and maltamide, or an alkoxyated derivative thereof, wherein the ratio of zeolite to polyhydroxy fatty acid amide is from 1:10 to 20:1, and laundering fabrics therewith in conventional fashion."

Dependent claims 2 to 10 and 12 to 15 related to particular embodiments of the claimed composition or method.

III. In the notice of opposition, based exclusively on lack of inventive step, the following documents were *inter alia* submitted:

Document (8): H. Andree et al. "Possibilities of Combining Zeolite A with Different Co-Builders", Proceedings of the Second World Conference on Detergents, A.R. Baldwin Ed., 1987, American Oil Chemists' Society, pages 148 to 152.

Document (16): EP-A-0 355 626.

IV. With its letter dated 12 March 1998 the Respondent (Patent Proprietor) filed an experimental report.

V. In its decision, the Opposition Division held that the experimental report convincingly demonstrated that the zeolite built detergent compositions according to claim 1 as quoted above surprisingly achieved statistically significant improvements in greasy stain removal on cotton, polyester/cotton and polyester fabrics in comparison with zeolite built detergent compositions containing other nonionic surfactants instead of PFA.

VI. The Appellants (Opponents) appealed against this decision and filed

Document (23): EP-A-384070

with the statement setting out the grounds of appeal.

VII. Under cover of a letter dated 3 July 2002, the Respondent filed a set of claims as its first auxiliary request.

VIII. The Appellants argued as follows that the decision under appeal was incorrect:

- the production of Document (23) only with the grounds of appeal was justified by the Respondent only filing experimental evidence shortly before the oral hearing in the opposition proceedings;
- Document (23) demonstrated the existence of a zeolite considerably superior to Zeolite A in its properties;

- therefore, the comparative tests provided by the Respondent in respect of only one kind of zeolite, i.e. Zeolite A, were not sufficient to demonstrate the achievement of any surprising technical effect across the full scope of the independent claims which also embraced detergent compositions and laundering methods comprising zeolites different from Zeolite A;
- moreover, the surprising technical effect of improved greasy soil removal found by the Opposition Division was not that promised by the patent;
- finally, the Respondent's experimental evidence did not support such a surprising technical advantage since none of the comparative examples was based on the detergent compositions of Document (16), which represented the most relevant prior art in view of the technical problem of obtaining good removal of greasy soil.

IX. The Respondent argued as follows:

- Document (23) should be excluded from the appeal proceedings since it could have been filed at the oral hearing before the Opposition Division and since it was not sufficiently relevant;
- it accepted that there were different grades of zeolite with different performance characteristics, but maintained that all zeolites suffer from the same general deficiencies;
- it submitted that washing tests were influenced by the particular stains, the particular surfactant mixture, the particular substrate and the

particular washing conditions used and thus the provided experimental evidence was sufficient to show clear trends;

- no reason was given by the Appellants to suggest that the experimental evidence did not demonstrate an inventive step in respect of the full scope of the amended claims.

- X. The Appellants requested that the decision under appeal be set aside and the patent be revoked.

The Respondent requested that the appeal be dismissed and the patent maintained on the basis upheld by the Opposition Division or, alternatively, on the basis of the claims and description of the first auxiliary request filed with its letters dated 3 and 30 July 2002. It requested oral proceedings only in case neither the main nor the first auxiliary request could be allowed.

Reasons for the Decision

1. *Admissibility of the late filed evidence*

- 1.1 The Appellants filed Document (23) with the statement setting out the grounds of appeal, maintaining it was required to answer the Respondent's experimental data filed "remarkably close" to the oral proceedings before the Opposition Division (see points I and IV above). This was obviously considered by the Appellant to justify the late filing of Document (23).

1.2 The Board notes that, before the oral proceedings on 28 April 1998, the Appellants had more than six weeks to retrieve and produce evidence supporting their objections to the Respondent's experimental evidence.

Moreover, Document (23) was readily available to the Appellants, since it is "in house" prior art.

Therefore, the Board concludes that the Appellants could have filed Document (23) in the first instance proceedings, and, accordingly, that this document was not filed in due time.

1.3 The Appellant also submitted that Document (23) confuted point 8.5(c) of the Opposition Division's decision by demonstrating that zeolites may have different properties. The document described a zeolite considerably superior to Zeolite A in its calcium binding properties. This showed that the Opposition Division was wrong to assume that the various forms of zeolite were freely interchangeable with Zeolite A and, therefore, wrong to consider that the Respondent's experiments demonstrated the alleged benefit of the invention across the entire range of zeolite builders within the scope of claim 1 as maintained.

However the appealed decision does not state at point 8.5(c) that all zeolites have identical properties, but only that they are "freely interchangeable as builders": to a person skilled in the art this means that zeolite built detergent compositions providing satisfactory results may be modified by changing the zeolite and still produce comparably satisfactory (but not necessarily identical) cleaning results.

To illustrate this possibility of "free interchange" suppose that a certain zeolite - say, zeolite "X" - produces better results in combination with surfactant "A" rather than with surfactant "B", then the person skilled in the art would also expect that any other zeolite different from "X" would produce better results with surfactant "A" than with surfactant "B".

The fact that this was the real reasoning of the Opposition Division appears from the subsequent statement in point 8.5(c) of its decision that the absence of "evidence that **improvements in cleaning performance** were not realised for zeolites other than zeolite A" (emphasis added by the Board). From this passage and from the definition of the "improvement" given in point 8.4 of the decision, it is apparent that the Opposition Division considered that, in the absence of any evidence to the contrary, the claimed compositions based on zeolites different from Zeolite A could reasonably be expected to produce the same technical advantage observed in the experimental comparisons based on Zeolite A: i.e. a significantly superior detergency as compared to detergent compositions with the same zeolite but in which other surfactants were used instead of PFA.

Thus the Opposition Division did not go so far as to assume that any claimed detergent compositions based on a zeolite different from Zeolite A could reasonably be expected to produce exactly the same degree of detergency as that observed from the use of Zeolite A.

Therefore, even if Document (23) actually described - as alleged by the Appellants - a zeolite considerably superior to Zeolite A in its properties, this evidence

would not be relevant in assessing the alleged error in the decision which the Appellants gave as their reason for producing this document.

- 1.4 It follows that Document (23) does not provide any information more relevant than that already disclosed in the citations on file and, thus, the Board decides not to admit Document (23) into the proceedings (see Article 114(2) EPC).

Respondent's main request

2. *Articles 54, 84, 123(2) and (3) EPC*

The Board has noticed that claim 1 as upheld by the Opposition Division includes an obvious clerical error: it refers to a previously never mentioned "*said chain*".

However, this error was already present in claim 1 as granted and its correction is self-evident (it can only logically refer to the previously mentioned "*hydrocarbyl*", see also claim 11). Indeed the error seems to have occurred during the examination proceedings, when the original wording in claim 1 of the patent application "*hydrocarbyl chain with*" was amended to omit the word "*chain*" without correspondingly amending the subsequent expression "*said chain*".

The Board is satisfied that the patent as maintained by the Opposition Division complies with the requirements of Articles 54, 84, 123(2) and (3) EPC.

It is not necessary to give further details since no objections were raised by the Appellants in this regard during the appeal proceedings.

3. *Inventive step concerning the subject-matter of claim 1 of the Respondent's main request (Article 56 EPC)*

3.1 Claim 1 defines built detergent compositions comprising at least 1% by weight of a zeolite and at least 1% by weight of a PFA of a given formula.

3.2 The technical problem addressed in the patent in suit

3.2.1 In the section referring to the background art, the patent in suit mentions the technical problem represented by the low performance of zeolites in detergent compositions (see page 2, lines 16 to 18 and 23 to 26) and then alleges that it had been found that certain PFA-containing detergent compositions provided "*excellent overall cleaning performance in full or partial replacement of commonly used petroleum-derived surfactants, such as linear alkyl benzene sulfonates*" (see page 2, lines 31 to 33). In particular, the PFA enhanced solubility and surprisingly improved the zeolite builder performance in under-built wash conditions (see page 2, lines 35 to 38).

The disclosure in this section of the patent in suit concludes by saying: "*Simply stated, the present invention employs an improved deterative surfactant system..*" in which PFA provides zeolite built detergent compositions with "*enhanced detergency performance*" (see page 2, lines 39 to 41 of the patent in suit).

3.2.2 The Appellants maintained that the technical effect promised by the patent was an improved overall cleaning performance; whereas the Respondent submitted that the technical problem explicitly mentioned in the patent in suit was how to overcome the general deficiencies of zeolite as a builder.

- 3.2.3 The Board finds that the Respondent's statement completes, rather than contradicts, that of the Appellant.

From the above mentioned section of the patent in suit it is apparent that the technical problem addressed is that of **improving the overall cleaning performance of the zeolite built laundering compositions of the prior art.**

- 3.3 The closest prior art

The patent in suit identifies as prior art aiming at the same technical effect as the claimed subject-matter the known zeolite built detergent compositions containing "various detergency adjuncts" (see page 2, lines 23 to 26).

This is in agreement with the explicit generic teaching in Document (8) that the shortcomings of zeolite as a builder may be ameliorated by the use of co-builders. In particular, this document discloses the use of polycarboxylates to enhance the zeolite performance with regard to detergency (see page 150, lefthand column, lines 3 to 7).

Therefore, the Board considers that the most relevant state of the art is represented by the detergent compositions of the prior art containing zeolite and polycarboxylate co-builders identified in general in Document (8).

3.4 The technical problem.

3.4.1 Since claim 1 embraces detergent compositions containing polycarboxylate co-builders, the claimed compositions differ from those of the relevant prior art in that they comprise a PFA surfactant.

3.4.2 The Respondent provided, in a letter dated 12 March 1998, some experimental comparisons between the claimed compositions and prior art compositions differing therefrom in that they comprises, instead of the PFA, a different nonionic surfactant or an anionic surfactant (Examples 1 to 4).

It is undisputed that the comparative examples used in these experiments are representative of conventional zeolite built detergent compositions containing polycarboxylate co-builders, i.e. compositions of the relevant prior art identified above.

3.4.3 The Respondent maintained that this experimental evidence was sufficient to demonstrate credibly that the claimed compositions achieved improved detergency in comparison to prior art compositions. In its opinion the experiments demonstrated clear trends from which it was apparent that the shortcomings of zeolite performance had actually been overcome.

3.4.4 The Board observes that the Respondent did not discuss in any detail which experimental values were to be taken as showing these "trends" and why, nor can the Board locate such "trends" in the data provided.

Therefore, the Board finds that the experimental comparisons 1 to 4 convincingly and surprisingly demonstrated a statistically significant improvement **only** in the removal of greasy soil for certain zeolite built detergent compositions according to claim 1.

It follows that the experimental evidence provided by the Respondent does not demonstrate an improved overall cleaning detergency for the claimed composition.

3.4.5 Thus the technical problem addressed in the patent in suit (see point 3.2.3 above) has not been credibly solved by the claimed subject-matter and the technical problem has to be reformulated (see, for example, T 495/91 of 20 July 1993, No. 4.2 of the Reasons for the Decision, and T 881/92 of 22 April 1996, No. 4.1 of the Reasons for the Decision, neither published in the OJ of EPO, as well as other decisions cited in "Case Law of the Boards of Appeal of EPO", fourth edition 2001, page 107, point I.D.4.3).

3.4.6 As already indicated at point 3.4.4 above, the experimental evidence demonstrates a more limited technical advantage: the removal of greasy soils by the claimed detergent compositions containing polycarboxylate co-builders and anionic surfactants is superior to that of corresponding detergent compositions of the prior art in which other conventional ionic or nonionic surfactants are used instead of PFA.

3.4.7 The Appellants objected to the possibility of using this more limited advantage in the redefinition of the objectively existing technical problem by maintaining that:

- (a) such a redefined technical problem did not correspond to the effect of "overall cleaning" enhancement promised by the patent in suit;
- (b) the comparative examples in the experimental evidence were not representative of the most relevant state of the art with respect to detergency of greasy soil: i.e. the compositions disclosed in the examples of Document (16) based on mixtures of ethoxylated fatty acid nonionic surfactants.

3.4.8 With respect to objection (a) the Board observes that a demonstrated technical advantage of the alleged invention is not rendered irrelevant for the assessment of inventive step by the simple fact that it differs from that promised in the patent.

As mentioned in point 3.4.5 above, when the technical problem addressed in the patent in suit has not been credibly solved, it has to be reformulated taking into account the technical effect actually demonstrated.

In particular, it is established case law of the Boards that a technical advantage that is recognised as implied or related to the problem initially suggested in the patent may be used to reformulate the problem (see, for instance, T 184/82 of 4 January 1984, OJ 1984, page 261, No. 5 of the Reasons for the Decision).

In the present case, it is self-evident to the person skilled in the art that the enhancement of the "overall cleaning" of zeolite built detergent compositions explicitly mentioned in the patent inevitably implies the improvement of greasy soil detergency as well.

Moreover, this aspect of the desired overall cleaning performance is also explicitly mentioned in the patent specification, at least with respect to some preferred embodiments (see page 15, lines 3 to 9 and 43 to 45).

Accordingly, it is appropriate to use such a more limited technical advantage to reformulate the technical problem to be solved.

With respect to objection (b) the Board considers that Document (16) is not unambiguously aiming to solve the technical problem of providing zeolite built detergent compositions with improved detergency of greasy soil.

It only states at page 3, lines 43 to 46, i.e. in its description of the nonionic surfactants to be used in the compositions it claims, that mixtures of low and high ethoxylated alcohols are characterized by "erhöhte Waschkraft" (i.e. superior detergency) of both fatty and mineral soils. However, it does not provide any evidence corroborating that statement and does not even clarify whether this superior detergency is superior to that obtained in zeolite built detergent compositions of the prior art or simply to that of the other zeolite built detergent compositions encompassed in its own claim 1.

Thus it is not immediately apparent that the compositions disclosed in Document (16) provide better removal of greasy soil than the other detergent compositions of the prior art containing zeolite and polycarboxylate co-builders (see also in point 3.3 above) and, therefore, that it represents the closest state of the art.

Consequently, the Board concludes that neither of the Appellants' objections to the reformulated problem are convincing.

- 3.4.9 Therefore, in the absence of convincing evidence to the contrary, the Board concludes that the subject-matter of claim 1 has credibly solved the technical problem of **improving the detergency of greasy soils of the zeolite-built detergent compositions.**

3.5 *Inventive step*

- 3.5.1 The claimed compositions differ from the zeolite built detergent compositions of the prior art in that PFA is totally or partially substituted for the conventional surfactants.
- 3.5.2 Therefore, to answer to the question of obviousness, it is necessary in the present case to determine whether or not the person skilled in the art would have substituted conventional surfactants with PFA with a reasonable expectation of success in improving their greasy soil detergency.
- 3.5.3 None of the available documents discloses explicitly or implicitly that PFA is more effective than the other surfactants in removing greasy soil or in enhancing the performance of zeolite detergency builders with respect to this kind of soil.

Accordingly, the person skilled in the art has no reason to expect that the technical problem could be solved by partially or completely substituting PFA for the surfactants used in the prior art compositions.

- 3.6 Consequently, the subject-matter of claim 1 involves an inventive step and, therefore, complies with the requirements of Article 56 EPC.

4. *Inventive step concerning the subject-matter of claims 2 to 15 of the Respondent's main request*

4.1 Claim 11 describes a method for improving the fabric cleaning detergency of zeolite built detergent compositions by incorporating therein at least 1% by weight of the same PFA of claim 1 at a zeolite/PFA ratio of 1:10 to 20:1 and by laundering fabrics therewith.

In the Board's judgement the method of claim 11 amounts to a method for laundering fabric by using a zeolite built detergent compositions comprising at least 1% by weight of the same PFA of claim 1 at a zeolite / PFA ratio of 1:10 to 20:1.

The wording "*..for improving the fabric cleaning performance of a detergent composition comprising...said method being characterized in that it comprises incorporating into said detergent composition....a polyhydroxy fatty acid amide...*" only implies the further proviso that the obtained detergency must be superior to that obtained by the corresponding detergent compositions free from PFA.

4.2 Since the process of claim 11 uses as laundering detergent the compositions defined in claim 1, the Board finds that the subject matter of claim 11 involves an inventive step for the same reasons given above for claim 1.

The same applies to the dependent claims 2 to 10 and 12 to 15.

5. Since the claims according to the Respondent's main request have been found to comply with the requirements of the EPC there is no need to deal with the first auxiliary request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa