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**Datasheet for the decision
of 7 September 2007**

Case Number: T 0931/04 - 3.3.06

Application Number: 97940836.6

Publication Number: 0925342

IPC: C11D 1/72

Language of the proceedings: EN

Title of invention:

Automatic dishwashing compositions containing low foaming
nonionic surfactants in conjunction with enzymes

Patentee:

The Procter & Gamble Company

Opponents:

Unilever PLC
Reckitt Benckiser N.V.
Cognis GmbH

Headword:

ADD Composition/PROCTER

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (all requests) - no: obvious alternative"

Decisions cited:

-

Catchword:

-



Case Number: T 0931/04 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 7 September 2007

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 11 May 2004
revoking European Patent No. 0925342 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P.-P. Bracke
Members: P. Ammendola
J. Van Moer

Summary of Facts and Submissions

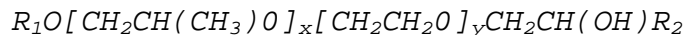
I. This appeal is from the decision of the Opposition Division to revoke the European patent No. 0 925 342 relating to automatic dishwashing detergent compositions (hereinafter "ADD compositions") containing low foaming nonionic surfactants in conjunction with enzymes.

II. Claim 1 of the granted patent read:

"1. An automatic dishwashing detergent composition comprising:

(a) from 5% to 90% by weight of the composition of a builder;

(b) from 0.1% to 15% by weight of the composition of surfactant, wherein said surfactant comprises a nonionic surfactant having the formula:



wherein R_1 is a linear or branched, aliphatic hydrocarbon radical having from 4 to 18 carbon atoms; R_2 is a linear or branched aliphatic hydrocarbon radical having from 2 to 26 carbon atoms; x is an integer having an average value of from 0.5 to 1.5; and y is an integer having a value of least 15;

(c) from 0.1% to 6% by weight of the composition of a deterative enzyme;

(d) optionally, from 0.1% to 40% by weight of the composition of a bleaching agent; and

(e) adjunct materials."

III. Three Opponents had sought revocation of the patent in suit on the grounds of insufficiency of disclosure (Article 100(b) EPC), lack of novelty and inventive step

(Article 100(a) in combination with Articles 52(1), 54 and 56 EPC).

The following documents had been considered, *inter alia*, during the discussion on inventive step:

document (1) = WO 94/22800,

document (2) = EP-A-0 640 684,

document (13) = US-A-4,620,936,

document (24) = declaration of Graeme Duncan
Cruickshank dated 11 September 2003

and

document (25) = "Annex A" to the letter of Opponent I
dated 17 September 2003.

IV. In the decision under appeal the Opposition Division concluded that the subject-matter of claim 1 of the patent as granted or as amended according to the then pending sole auxiliary request was sufficiently disclosed and novel, but lacked inventiveness when starting either from document (1) or from document (13). The Opposition Division found, in particular, that the comparative examples used in the experiments reported in documents (24) and (25) were different from the example of the closest prior art labelled "*Composition IV*" in document (13).

V. The Patent Proprietor (hereinafter Appellant) lodged an appeal against this decision and filed with the grounds

of appeal four sets of amended claims respectively labelled as first to fourth auxiliary requests, as well as

document (26) = declaration of Gillian Margaret Hardy dated 20 September 2004.

VI. For the present decision it is sufficient to consider claim 1 as granted (see above section II) and its versions according to the auxiliary requests.

Claim 1 of the **first auxiliary request** differs from claim 1 as granted only in that the wording "*a builder;*" has been replaced by "*a builder, wherein the builder comprises citrate or carbonate;*".

Claim 1 of the **second auxiliary request** differs from claim 1 as granted only in that the wording "*a builder;*" has been replaced by "*a builder, wherein the builder is a nil-phosphate builder system comprising citrate and carbonate;*".

Claim 1 of the **third auxiliary request** differs from claim 1 as granted only in that the initial wording "*An automatic dishwashing detergent composition comprising:*" has been replaced by "*Use of an automatic dishwashing detergent composition for removal of greasy soils in an automatic dishwashing method, the composition comprising:*".

Claim 1 of the **fourth auxiliary request** differs from claim 1 as granted only in that the wording "*a deterative enzyme;*" in the definition of (c) has been replaced by "*a deterative enzyme which comprises an amylase;*".

VII. Only Opponents I and III (hereinafter Respondents I and III) replied in writing to the grounds of appeal. They objected to the inventiveness of the subject-matter of claim 1 according to each of the Appellant requests, as well as, to the admissibility of the first auxiliary request in view of Articles 84 and 123(2) EPC.

VIII. Oral proceedings took place before the Board on 7 September 2007 in the announced absence of Opponent II (Respondent II).

During the hearing the Respondents disputed the sufficiency of disclosure of the claimed invention (Article 100(b) EPC) as well as the admissibility of the fourth auxiliary request in view of Article 123(3) EPC.

IX. In respect of the inventive step assessment the Appellant argued in writing and orally in essence as follows.

Document 13 represented the closest prior art and the experiments reported in documents (24), (25) and (26) would demonstrate the superior greasy soil removal achieved by the invention vis-à-vis this prior art. The comparative examples used in these experiments contained as nonionic surfactants Plurafac[®] LF404 and LF403, i.e. low-foaming alkoxyated alcohols which were extremely similar in their chemical structure to the Plurafac[®] RA40 nonionic used in Composition IV of document (13) and from which they would only differ in the mix of propyleneoxy and ethyleneoxy units. In particular, Plurafac[®] LF404 would correspond to one of the preferred

nonionic surfactants specifically disclosed in this citation.

None of the other citations rendered obvious the grease removal benefits provided by the specific epoxy-capped nonionic surfactants used in the compositions of the invention.

However, even if the available experimental evidence were disregarded, the claimed subject-matter would still represent a non-obvious solution to the problem of providing an alternative to the compositions of document (13), because the available documents disclosed nothing that would have prompted the person skilled in the art to select the epoxy capped surfactants of the invention among the known low foaming nonionic surfactants.

The same reasoning applied in essence to all auxiliary requests.

The subject-matter according to the second auxiliary request was rendered even more inventive in that none of the documents dealing with grease removal would mention specifically the possibility of using citrate and carbonate in combination to replace the phosphate builder used in document (13) and this latter contained no pointer to document (2), i.e. to the only document disclosing specifically the use of both citrate and carbonate builders in combination.

The third auxiliary request was manifestly inventive in that it expressly aimed at the technical effect of superior greasy soil removal provided by the claimed

composition, an effect that was only disclosed in the patent in suit.

The fourth auxiliary request further aimed at a larger cleaning spectrum, in that the presence of the amylase provided for effective starch removal.

- X. Respondents I and III have refuted the Appellant's reasoning in respect of inventive step by relying in essence on the same arguments of the decision under appeal.

They considered that, in case document (13) were to be regarded as the closest prior art, then the sole credibly solved technical problem was that of providing an alternative to the prior art because the experiments of documents (24) to (26) represented no supporting evidence for the allegation that the level of grease removal achieved by the invention was superior to that of the prior art disclosed in Composition IV of document (13). Indeed, in view of the differences in the average number of propylene oxide units between Plurafac® LF403, LF404 and RA40, their abilities in promoting grease removal, rather than being substantially equivalent, were also to be expected to differ appreciably. This would also be in accordance with the different cleaning results observed between the two comparative examples in document (26).

The claimed subject-matter lacked an inventive step because it was obvious for the skilled person to replace the nonionic surfactant used in Composition IV of document (13) by any other effective nonionic surfactant known in the field, such as those disclosed in document

(1) as being advantageous for environmental reasons and rinse properties.

The same reasoning applied to all auxiliary requests, since no unexpected technical advantage had been proven or even only alleged to descend by any of the features introduced in claim 1 according to these requests. Nor would the use of a conventional nil-phosphate builder, such as that disclosed in many examples of document (2), render inventive the subject-matter of the second auxiliary request.

XI. The Appellant has requested that the decision of the first instance be set aside and that the patent be maintained as granted or, in the alternative, on the basis of the first to fourth auxiliary requests filed under cover of the grounds of appeal with the amendment in the third auxiliary request of the deletion of claim 8.

The Respondents I and III have requested that the appeal be dismissed.

Respondent II has filed no request.

Reasons for the decision

1. In view of the negative findings (for the reasons given hereinafter) in respect of inventive step for all Appellant's requests, the Board had to decide neither on the objection to the sufficiency of disclosure (Article 100 (b) EPC) raised at the hearing before the Board, nor on the objections as to the compliance of the

first and fourth auxiliary requests with the requirements of Articles 84, 123(2) or 123(3) EPC.

Inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC): claim 1 as granted

2. The subject-matter of claim 1 (see above section II of the Facts and Submissions) is an ADD composition characterised by the presence in the given amounts of the builder (a), of the epoxy-capped nonionic surfactant (b) and of the enzyme (c).

3. The Board considers it appropriate to summarise preliminarily some undisputed facts on ADD compositions which have been referred to by the parties during the proceedings as being part of the common general knowledge of the skilled person:
 - i) it is evident to the skilled person that ADD compositions must necessarily be low foaming;

 - ii) they must also comply with environmental legislation limiting the use of phosphate builders and requiring detergent compositions to be increasingly environmentally friendly,

 - iii) their cleaning efficacy against starch or protein soil can be promoted by adding therein enzymes,

 - iv) their efficacy in removing lipstick stains is considered representative of their ability to remove other kinds of greasy stains too, as the former are recognised as one of the most resistant among the greasy soils normally present on soiled tableware,

v) there is no generally accepted testing protocol for ranking the cleaning efficacy of ADD detergent compositions, and

vi) the level of cleaning provided by ADD detergent compositions is not only due to the surfactant ingredient present therein.

4. The Board notes that the description of the patent in suit - after having stated in paragraph 1 that the invention relates to ADD compositions "*having low foaming nonionic surfactants in conjunction with enzymes to provide superior dish cleaning performance*" and after some generic comments on the prior art in paragraphs 2 to 4, mostly referring to the well-known facts i) to iii) listed above - discloses in paragraphs 5 and 9 that there was a continuous need for ADD compositions providing better cleaning, especially greasy soil removal benefits, without unacceptably high sudsing, and that the claimed ADD compositions provide "*superior*" cleaning, especially starch containing soil and greasy soil removal benefits, i.e. they satisfy the existing need. Accordingly, paragraphs 16 and 17 confirm that the advantages of the invention include "*excellent*" greasy soil removal and paragraph 167 reports that the compositions of the invention have provided "*excellent*" results in cleaning tests, *inter alia*, on lipstick-stained plastic and ceramic. The patent however does not identify any specific prior art against which the ADD compositions of the invention have been found to provide superior cleaning results.

4.1 Hence, the Board finds that the patent in suit identifies the technical problem underlying the invention as that of rendering available detergent compositions suitable for automatic dishwashing (and thus necessarily low foaming) providing a level of greasy soils removal superior to that of (unspecified) ADD compositions of the prior art.

4.2 It is undisputed that document (13) is the sole available citation referring, although only implicitly, to the same problem.

Indeed this citation addresses explicitly a different technical problem (see e.g. column 1, lines 10 to 28), that of rendering available bleaching ingredient containing ADD compositions that are stable and "*at least equally effective*" as the prior art. A composition providing improved cleaning is only disclosed in the experimental comparison given in example VI of document (13). As a matter of fact, the data reported in the Table of this example (see document (13) column 6, lines 13 to 16) demonstrate that the Composition IV, containing *inter alia* phosphate and carbonate builders, Plurafac® RA40 as nonionic surfactant and enzymes, is superior to a (then) standard commercial ADD composition in the removal of lipstick and fat (i.e. greasy stains) as well as in the removal of starch soil.

4.3 It must be stressed, however, that no other embodiments (not even the other preferred ones) of the more general definition given e.g. in claim 1 of document (13) may be presumed to **necessarily** be (at least) as effective as Composition IV in terms of greasy soil removal. On the contrary, in view of the above cited definition of the

explicitly addressed technical problem given in column 1 of document (13), the other embodiments of the prior art could even possibly be just as effective in removing greasy soil as the considered standard commercial prior art.

Accordingly, the Board finds that Composition IV of document (13) is apparently the example providing the best cleaning level achievable by the ADD compositions of this prior art. Therefore, it represents the sole reasonable starting point for the assessment of inventive step. This has not been disputed by the Appellant.

4.4 The Board considers that the generic statements in the patent in suit as to the achieved level of greasy soil removal (see above point 4) are **not** sufficient for rendering credible that the level of greasy soil removal obtained by the invention is superior to that of any ADD composition of the prior art and, thus, also to that of the compositions of document (13). This is already evident from the fact that, as acknowledged by the Appellant too, there exists not even a generally accepted test procedure for ranking the cleaning efficacy of ADD compositions (see also above point 3 (v)).

4.5 Nevertheless, the Appellant has argued that the experimental comparisons reported in documents (24) to (26) would render it credible that the ADD compositions of the invention have solved the technical problem underlying the invention also vis-à-vis Composition IV of document (13). These experimental data would demonstrate that the specific epoxy-capped nonionic

surfactants of the claimed ADD compositions are more effective in greasy soil removal than Plurafac® LF403 or Plurafac® LF404, i.e. two examples of the same family of (not epoxy-capped) low foaming alkoxyated straight chain alcohols that is expressly indicated as preferred in document (13) and used in all the ADD compositions exemplified therein, including Composition IV (see column 4, lines 9 to 16, and the examples). Moreover, the used Plurafac® LF403 would correspond to the Lutensol® LF403, explicitly mentioned in the portion of document (13) just identified. The Appellant has further stressed that both the used Plurafac® ingredients of the comparative examples under considerations differ from the Plurafac® RA40 used in Composition IV only in the mix of propylene oxide and ethylene oxide units and has maintained that the skilled person would therefore consider all these nonionic surfactants to be substantially equivalent.

- 4.6 The Board concurs with the Appellant that the available experimental data could demonstrate that the nonionic surfactant of the invention are superior in lipstick stains removal to two of the nonionic surfactants possibly preferred in document (13).

However, this would also render it credible that the level of greasy soil removal achieved by the claimed composition is superior to that of Composition IV of documents (13), only if it would be undisputedly evident, inter alia, that the structural differences between Plurafac® RA40 and the two other tested Plurafac® surfactants have no bearings on their cleaning results.

- 4.6.1 However, the Respondents have disputed the Appellant's unsupported statements on the irrelevance of these structural differences and the equivalence of the two surfactants used in the comparative examples to Plurafac® RA40. Hence, these statements are to be considered unproven allegations lacking any credibility.
- 4.6.2 Moreover, the difference in cleaning results observed between the comparative examples based on Plurafac® LF403 or LF404 in document (26) seems rather to confirm that even structural differences only in the mix of propylene oxide and ethylene oxide units, i.e. similar to those existing between Plurafac® RA40 and each of the nonionic surfactants used in the comparative examples, may be sufficient for producing appreciable differences in terms of cleaning results.
- 4.6.3 Hence, the available experimental data in documents (24) to (26) do not allow to infer therefrom any sound conclusion as to whether the cleaning efficacy of the claimed ADD compositions is inferior, comparable or superior to that of Composition IV of document (13) (i.e. the apparently best performing among the embodiments of the prior art).
- 4.7 Accordingly the Board concludes that the Appellant has failed in rendering it credible that the ADD compositions of the invention have solved the technical problem mentioned in the patent in suit also vis-à-vis the relevant prior art.

Under these circumstances, the sole technical problem credibly solved by the subject-matter of claim 1 remains that of rendering available **further** ADD compositions

based on low foaming nonionic surfactants in conjunction with enzymes, i.e. an alternative to Composition IV of document (13).

4.8 It is undisputed that the subject-matter of claim 1 of the patent in suit differs from Composition IV of document (13) only because the nonionic surfactant (b) of the claimed ADD composition is different from Plurafac[®] RA40 of Composition IV.

4.9 Hence, in the present case the assessment of inventive step boils down to establishing if the skilled person would have considered replacing the Plurafac[®] RA40 in Composition IV of document (13) by means of an epoxy-capped nonionic surfactant of the formula given for ingredient (b) in claim 1 as granted, in the expectation that such modification would not appreciably impair the suitability of the resulting composition as ADD.

4.10 The Board notes that the Appellant has presented no reason which could have specifically dissuaded the skilled person, searching for an alternative to Composition IV of document (13), from the possibility of replacing the nonionic surfactant used in this Composition by other low foaming nonionic surfactants already successfully used in enzyme-containing ADD compositions.

On the contrary, the low foaming nonionic surfactants are not mentioned in document (13) among the essential ingredients of the ADD compositions disclosed in this citation (see document (13), claim 1 and column 4, lines 1 to 8), i.e. they are optional ingredients. This implies that, according to this citation, even in case

of complete omission of such ingredients one should obtain an acceptable level of soil removal (at worst the same level already obtained by previous standard commercial ADD compositions, see above point 4.3). In other words, according to document (13) the ADD compositions disclosed therein provide a satisfactory cleaning level **even in the absence of any surfactant at all.**

4.10.1 Hence, the skilled person would also reasonably expect that e.g. the optional Plurafac[®] RA40 ingredient of Composition IV of document (13) may be replaced by whatever low foaming nonionic surfactant already known to be suitable for ADD compositions containing enzymes, such as any of the low foaming epoxy-capped nonionic surfactants disclosed in document (1), as any such modification cannot possibly impair the suitability of the resulting composition as ADD.

4.10.2 Accordingly, and as the low foaming epoxy-capped nonionic surfactants disclosed in document (1) correspond undisputedly to ingredient (b) of the claimed composition, the Board concludes that a skilled person searching for an alternative to the prior art would arrive at the claimed subject-matter without exercising any inventive ingenuity.

4.11 The Appellant has maintained instead that the prior art contains no pointer that would have prompted the skilled person to specifically select the epoxy-capped surfactants of document (1) as possible replacement for the nonionic surfactants disclosed in document (13). Hence, inventive ingenuity would at least be required for selecting the epoxy-capped nonionic surfactants of

document (1) among the many low foaming nonionic surfactants known in the field of ADD compositions.

4.11.1 The Board considers, however, that the mere existence of other equally obvious alternative solutions to the posed problem does not render inventive the claimed group thereof because, even in the absence of any specific reason for preferring one or the other, the **arbitrary** selection of any obvious solutions to the posed problem among those that are equally suggested to the skilled person requires no particular skills and, for this reason, does not involve an inventive step.

4.12 Therefore, the Board concludes that the subject-matter of claim 1 as granted does not involve an inventive step and, thus, that the grounds of opposition under Article 100(a) EPC in combination of Articles 52(1) and 56 EPC prejudice the maintenance of the granted patent. Hence, the main request of the Appellant is not allowable.

Inventive step (Articles 52(1) and 56 EPC): claim 1 of the first to fourth auxiliary request

5. Since the ADD Composition IV of document (13) already comprises carbonate builder as well as amylase enzyme and was used to remove greasy soils, the subject-matter of claim 1 according to versions thereof in the first, third and fourth auxiliary request (see above section VI of the Facts and Submissions) result from the same obvious replacement of the surfactant used in this prior art that would have lead the skilled person, searching for an alternative to the prior art, to the subject-matter of claim 1 as granted.

Hence, the subject-matter of claim 1 according to each version thereof in the first, in the third and in the fourth auxiliary request does not involve an inventive step for the same reasons indicated above for claim 1 as granted.

- 5.1 In order to arrive from Composition IV of document (13) to the subject-matter of claim 1 of the second auxiliary request (see above section VI of the Facts and Submissions) it is however additionally necessary to replace the phosphate-containing builder system used in the prior art by a nil-phosphate one that comprises citrate and carbonate.

The Board notes in this respect that:

a) it has not even been alleged by the Appellant that the use of the nil-phosphate builder provides the claimed composition with a technical advantage other than the obvious one of avoiding phosphate builders (see also above point 3 ii)),

and

b) nil-phosphate citrate / carbonate builder systems were undisputedly already known in the field of ADD compositions containing deterative enzymes at the filing date of the patent in suit, as evident from several examples of document (2).

Therefore, the Board concludes that no inventive ingenuity is required from the skilled person, who is searching for a phosphate-free alternative to

Composition IV of document (13), for combining the same obvious replacement of the nonionic surfactant ingredient discussed above for all other requests with a further obvious modification in order to render it more environmentally friendly, i.e. the modification consisting of the arbitrary selection of the nil-phosphate citrate / carbonate builder that is disclosed in document (2) among the possible nil-phosphate builders already used for similar ADD compositions.

Accordingly, the subject-matter of claim 1 according to the second auxiliary request also does not involve an inventive step.

- 5.2 Thus, the Board concludes that the subject-matter of claim 1 according to any of the versions in the first to fourth auxiliary requests of the Appellant does not comply with the requirements of Articles 52(1) and 56 EPC. Hence, none of the auxiliary requests is allowable either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P.-P. Bracke