Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 16 September 2021

Case Number: T 0566/17 - 3.3.06

Application Number: 09719022.7

Publication Number: 2252677

IPC: C11D1/72, C11D3/386, C11D11/00, C11D17/00, C11D17/04, C11D3/37

Language of the proceedings: EN

Title of invention:
Automatic detergent dishwashing composition

Patent Proprietor:
The Procter & Gamble Company

Opponents:
Dalli-Werke GmbH & Co. KG
Henkel AG & Co. KGaA

Headword:
Dishwashing composition comprising low temperature alpha-amylase /PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 56, 123(2)
RPBA Art. 12(4), 13(1)

Keyword:
Admissibility of documents filed in response to board's communication - (yes)
Inventive step (main request and auxiliary requests I and V) - (no) - obvious improvement
Admissibility of auxiliary requests II to IV - (yes)
Amendments (auxiliary requests II to IV) - added subject-matter (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0566/17 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 16 September 2021

Appellant: (Patent Proprietor)	The Procter & Gamble Company One Procter & Gamble Plaza Cincinnati, OH 45202 (US)
Representative:	Gill Jennings & Every LLP The Broadgate Tower 20 Primrose Street London EC2A 2ES (GB)
Respondent: (Opponent 1)	Dalli-Werke GmbH & Co. KG Zweifaller Strasse 120 52224 Stolberg (DE)
Representative:	f & e patent Braunsberger Feld 29 51429 Bergisch Gladbach (DE)
Respondent: (Opponent 3)	Henkel AG & Co. KGaA Henkelstrasse 67 40589 Düsseldorf (DE)
Representative:	Henkel AG & Co. KGaA CLI Patents Z01 40191 Düsseldorf (DE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 22 December 2016 revoking European patent No. 2252677 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: L. Li Voti
R. Cramer

Summary of Facts and Submissions

I. The patent proprietor's appeal is against the decision of the Opposition Division to revoke European patent no. 2 252 677.

II. Further to the statement of grounds of 28 April 2017, the Appellant filed by letter dated 2 May 2017 six sets of claims as main request and auxiliary requests I-V.

III. In their replies the respondents (Opponents 1 and 3) maintained objections under articles 83, 123(2), 54 and/or 56 EPC against all requests on file. Opponent 3 further objected to the admissibility of auxiliary requests II to IV and raised a clarity objection. The following documents are relevant for the present decision:

D5: WO 03/042347 A1
D15: Kirk-Othmer, Chemical Technology and the Environment, Volume 1, pages 151-152, 2007
D28: Experimental Report submitted by the proprietor on 25 March 2011 in the examination phase and resubmitted on 20 April 2015 during opposition
D28a: Experimental Report 2 submitted by the proprietor on 21 October 2016
D29: "*Stainzyme® Plus - Superior performance for total cleaning*", technical brochure from Novozymes A/S, 2007.

IV. In response to the board's communication of 9 December 2019 the appellant filed the further documents:

D33: Consumer complaint, Homesteading Today, 22 December 2005
D34: Consumer complaint, DIYnot, 19 May 2004

D35: Handbook of Detergents, Part C: Analysis, edited by H. Waldhoff and R. Spilker, page 10, 2004
D36: Declaration of Philip Souter of 18 February 2020.

V. In further letters opponent 3 requested not to admit these new documents and the appellant defended their admissibility and the inventiveness of the claimed subject-matter.

VI. At the oral proceedings before the board, held on 16 September 2021, the final requests of the parties were the following:

The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims of the main request, filed with letter of 2 May 2017 or, in the alternative, of one of auxiliary requests I to V, filed with the same letter.

Both respondents requested that the appeal be dismissed.

VII. Claim 1 of the main request reads as follows:

"*1. An automatic dishwashing detergent composition in unit dose form wherein the composition comprises at least 0.2 mg of active starch degrading enzyme per gram of composition and a sulfonated polymer; and wherein the starch degrading enzyme is a low temperature alpha-amylase that demonstrates at least 1.2 times the relative activity at 25°C of the enzyme of SEQ ID No.3; and wherein the weight of the composition is less than 25 grams.*"

Claim 1 according to auxiliary request I differs from that of the main request in that the composition further comprises "*at least 1 mg of active protease per gram of the composition*".

Claim 1 according to auxiliary request II differs from that of the main request in that "*the composition further comprises at least 1 mg of active protease per gram of the composition, and wherein the composition comprises a low temperature protease, which demonstrates at least 1.2 times the relative activity of the protease of SEQ ID No: 4 at 25°C*".

Claim 1 according to auxiliary request III differs from that of auxiliary request II in that the amount of active protease in the composition is "*at least 1.5 mg*" per gram of the composition.

Claim 1 according to auxiliary request IV differs from that of auxiliary request II in that the low temperature protease, which demonstrates at least 1.2 times the relative activity of the protease of SEQ ID No: 4 at 25°C, "*comprises the mutations G116V+S126L+P127Q+S128A versus SEQ ID NO: 1*".

Claim 1 according to auxiliary request V reads as follows:

"*1. A method of dishwashing in an automatic dishwashing machine comprising the step of placing an automatic dishwashing detergent composition in unit dose into the product dispenser and releasing it during the main-wash cycle; wherein the composition comprises at least 0.2 mg of active starch degrading enzyme per gram of composition and a sulfonated polymer; and*

wherein the starch degrading enzyme is a low temperature alpha-amylase that demonstrates at least 1.2 times the relative activity at 25°C of the enzyme of SEQ ID No.3; and wherein the weight of the composition is less than 25 grams."

Reasons for the Decision

Admissibility of documents D33-D36

1. These documents were filed by the appellant in reply to the board's preliminary opinion in order to underline the alleged difference between grit formation and soil redeposition.

   The board found these documents pertinent to the discussion due the above alleged difference and saw therefore no reason not to admit them into the proceedings under Article 13(1) RPBA 2007, applicable in the present case since the parties were initially summoned to oral proceedings on 5 August 2019.

2. Auxiliary request I - Inventive step (Article 56 EPC)

2.1 Claim 1 of this request concerns an automatic dishwashing detergent composition in unit dose form comprising a low temperature alpha-amylase in combination with a protease and a sulfonated polymer.

2.2 As stated in paragraph [0002] of the patent a frequent problem found in automatic dishwashing is the presence of grit on dishware/tableware after the dishwashing process even if the items were free of it before they went into the dishwasher. This problem appears to be more acute in the case of detergents in unit dose form

and of heavily soiled loads and to have a negative impact on shine.

As described in paragraphs [0001] and [0004] of the patent the purpose of the present invention is thus to provide a dishwashing composition which prevents grit formation during the automatic dishwashing process and provides excellent cleaning and finishing benefits.

2.2.1 Even though the patent states (paragraph [0002]) that the mechanism of grit formation is not well understood and in spite of the fact that the patent does not contain any clear explanation of what should be understood by the term "grit", the board accepts the appellant's view that it is a visible hard abrasive particulate soil, not present before dishwashing, but sometimes attached to the washed items after having been submitted to a dishwashing cycle. This is confirmed by the consumers' complaints D33 and D34, the last document referring to grit as a "sandy grimy residue". Moreover also D35, a handbook representing common general knowledge, identifies grit beside starch and grease as a problematic soil in automatic dishwashing. Finally D36 confirms this knowledge about grit at the priority date of the patent.

2.2.2 However, even if the phenomena of grit formation and of soil redeposition are different according to D36, soil redeposition will tend to occur necessarily during dishwashing, as explained in D15, and it will thus exist beside that of grit formation. This is also acknowledged in the patent in suit (paragraph [0011]) reading "*... anti-redeposition agent contributes to keep detached soils as individual entities in solution and prevents re-combination that can give rise to* ***grit formation.***"

Therefore, in the board's view, the phenomena of grit formation and soil redeposition, even though having possibly different mechanisms, cannot be considered independently from each other. In fact, also D35 discloses that a great percentage of consumers in North America pretreat the dishes before automatic dishwashing in order to cope with the problems of spotting and lack of shine caused by starch and grease (that definitely tend to redeposit as known from D15) and grit.

2.3 All parties agreed - and the board has no reason to take a different stance - that D5 represents the most suitable starting point for the evaluation of inventive step since this document, whilst not addressing the prevention of grit formation, concerns an automatic dishwashing composition in unit dose form that copes with soil redeposition (page 4, lines 9-11) and provides (page 5, lines 21-26) excellent cleaning and finishing performance and extraordinary shine benefits by combining sulfonated polymer with detergency enzymes.

In particular, the closest prior art is represented by the composition disclosed in example 1 of D5 (page 25), representing a unit dose automatic dishwashing composition having a weight of 20 grams and comprising 2% by weight of an alpha-amylase and 4% by weight of a protease, both enzymes being available from Novo Nordisk A/S, as well as 5% by weight of a sulfonated polymer (Alcosperse 240-D).

2.3.1 The composition representing the closest prior art thus differs from the subject-matter of claim 1 at issue only in that it neither specifies whether the amylase used is a low temperature alpha-amylase nor the amounts

of active (pure) amylase and protease enzymes contained in the commercial products used.

2.4 As regards the technical problem seen in the light of this closest prior art, the appellant maintained that it was the provision of an automatic dishwashing composition showing improved prevention of grit formation.

2.5 The board however notes that the only example of the patent in suit (paragraphs [0109] - [0113]) does not identify the amylase used as being according to claim 1 at issue and only discloses that the washed items present excellent shine, as also stated in D5 (page 25, last two lines) with regard to the glasses washed with the composition of example 1 representing the closest prior art. It is thus not possible to derive from the patent in suit if the claimed composition really provides a better prevention of grit formation over the closest prior art.

2.5.1 In order to make the alleged technical advantage credible the appellant filed during opposition the experimental reports D28 and D28a.

2.5.2 The board however agrees with the respondents that experimental report D28 is not relevant, as it does not test the **prevention** of grit formation, which is the technical effect discussed in the patent, but its **removal** after its alleged formation.

Moreover, as shown in part III of D28, the glass samples are soiled with "grit" only after pre-wash (by adding a starchy soil (Hungry Jack® mashed potato)) and the dishwashing machine is then run for only ten minutes, i.e. a very short time not corresponding to

any normal cycle of a dishwashing machine, which time is manifestly insufficient for avoiding deposition of the starchy soil on the glasses and its complete removal. Thereafter the soiled glass samples were washed in agitated water with and without addition of an amylase.

For the board, in the absence of further more precise and detailed information concerning the deposits identified on the unwashed and washed samples (Table 1), it cannot be reasonably assumed that the visible soil spots remaining after washing represent only grit deposits, and not for example a combination of deposited grit and starchy soil or just redeposited starch. The alleged improvement thus cannot be derived from these tests.

2.5.3 In D28a glass tumblers are subjected to repeated complete dishwashing cycles in the presence of a mixed soil preparation and of a composition comprising the following combination of enzymes in amounts in accordance with claim 1 at issue:

- Composition 1 comprising a mixture of Savinase® protease with a Termamyl® amylase, which is **not** a low temperature amylase as required in claim 1 at issue,
- Composition 2 comprising a mixture of a Savinase® protease with Stainzyme Plus®, a low temperature amylase according to claim 1, and
- Composition 3 comprising a mixture of the protease Excellase® with a Termamyl® amylase **not** according to claim 1,

with Composition 2 being thus the only composition according to claim 1 at issue.

This test appears to show that the use of a low temperature amylase (Composition 2) in combination with a protease effectively reduces the number of deposits counted by means of computer aided image analysis, in comparison to the use of a combination comprising the conventional amylase Termamyl® (Composition 1). However, as in D28, it cannot be derived from this test if the counted spots identify only deposited grit particles or include possibly redeposited soil particles or are in fact redeposited soil particles only. It is in fact well known (see D15 or D5: page 4, lines 9-11 or even the patent in suit at paragraph [0011]) that during automatic dishwashing detached soil tends to redeposit on washed items as sticky residues that builds up on repeated washing.

Nevertheless, it can be agreed that Composition 2 according to claim 1 at issue provides a better overall cleaning performance than Composition 1, which comprises the conventional amylase Termamyl® also taught in D5 (page 15, second line from the bottom).

2.5.4 Therefore, starting from the closest prior art identified above, the technical problem solved by the claimed composition has to be formulated as the provision of an automatic dishwashing composition in unit dose form which provides an overall better cleaning, which also includes the prevention of grit formation.

2.6 It remains thus to be decided if it was obvious for the skilled person, faced with the technical problem posed, to use an amylase according to claim 1 at issue and amounts of pure protease and amylase as required by claim 1 in order to provide an automatic dishwashing composition in unit dose form providing an overall

better cleaning including the prevention of grit formation.

2.6.1 In this regard, the board notes that it was known from D35, representing common general knowledge, that the problems of spotting and lack of shine caused by grit, starch and grease were known and that European dishwashing detergents make use of "complex (and expensive) chemistry to solve these problems".

2.6.2 It was also common general knowledge from D15 to use enzymes for improving overall cleaning and avoiding soil anti-redeposition, especially for preventing dingy build-up of fatty (grease) and carbohydrate (starch) soils, which types of soils are also cited in D35. It was thus an obvious step for the skilled person, faced with the technical problem posed to look for better performing enzymes.

2.6.3 In this respect, it was for example known from D29 that the alpha-amylase Stainzyme Plus® (an enzyme in accordance with the requirements of claim 1 at issue, also used in D28a) performs better in automatic dishwashing than other commonly known amylases and that it can be used at concentrations of up to 1.5% by weight (i.e. 15 mg) of a dishwashing composition, which corresponds very likely to at least 0.2 mg pure enzyme per gram of composition) in order to avoid the build-up of redeposited starch soil on washed items and provide overall cleaning and prevention of dullness. D29 also clearly shows that increasing amounts of enzymes increase the overall cleaning effect.

2.6.4 Since D5 (page 16, line 2) also discloses the use of amounts of active (pure) enzyme up to 2% by weight (20 mg per gram of composition) the board is of the opinion

that it was obvious for the skilled person to use the alpha-amylase disclosed in D29 in amounts suggested therein in the composition of example 1 of D5 with the expectation of obtaining a superior overall cleaning effect including less soil redeposition and less formation of "grit".

Similarly it was obvious for the skilled person to use similar amounts of protease as required by claim 1 at issue in order to improve its enzymatic effect.

2.6.5 For the board, it follows from the above considerations that it was obvious for the skilled person faced with the above technical problem to arrive at a composition having all the features of claim 1 at issue.

2.7 The board therefore concludes that the subject-matter of claim 1 according to auxiliary request I lacks inventive step (Article 56 EPC).

3. Main request and auxiliary request V - Inventive step

3.1 As claim 1 of the main request, not requiring the presence of a protease, is broader than claim 1 of auxiliary request I it lacks inventive step for the same reasons.

3.2 Since example 1 of D5 already discloses the step of placing the composition into the product dispenser and releasing it during the main-wash cycle, the subject-matter of claim 1 of auxiliary request V, which relates to a method of automatic dishwashing with a composition in accordance with claim 1 of the main request placed into the product dispenser and released during the main-wash cycle, also lacks an inventive step for the same reasons.

4. Admissibility of auxiliary requests II to IV

As explained by the proprietor (see statement of grounds) these requests were filed as a reaction to the decision of the opposition division that the then pending auxiliary requests II to IV did not comply with the requirements of Article 123(2) EPC, which objection had been raised by the opponents for the first time during oral proceedings. The board therefore sees no reason not to admit them into the proceedings under Article 12(4) RPBA 2007.

5. Auxiliary requests II to IV - Article 123(2) EPC

5.1 According to claim 1 of **auxiliary request II** the claimed composition comprises the combination of at least 0.2 mg of active amylase that demonstrates at least 1.2 times the relative activity at 25°C of the enzyme of SEQ ID No.3 per gram of composition with a sulfonated polymer and at least 1 mg per gram of composition of active protease comprising a low temperature protease, which demonstrates at least 1.2 times the relative activity of the protease of SEQ ID No: 4 at 25°C.

Referring to the application as filed, the amended claim 1 is a combination of the features of claim 1 with one of the three alternatives of claim 5 (anti-redeposition agent or sulfonated polymer or a mixture thereof), with the preferred of the two alternatives of claim 3 (at least 1 mg of a protease comprising or not comprising a low temperature protease, the second alternative including also the use of the low temperature protease as sole protease) and with the preferred amylase disclosed in the paragraphs bridging pages 8 and 9 of the description. The original claims

thus do not contain a direct and unambiguous disclosure of the claimed composition. It is also undisputed that the description does not contain a wording disclosing a composition containing all the features of claim 1 at issue in combination.

It has thus to be evaluated if the documents of the application as filed contained a clear pointer to such a combination of features (see Case Law of the Boards of Appeal of the EPO, 9th edition, 2019, II.E.1.6).

5.1.1 The board remarks that, as regards the presence of the sulfonated polymer in the composition, the description discloses (page 2, second full paragraph) that "*In preferred embodiments, the composition comprises two different proteases with different temperature profiles ...* ***a low and a high temperature protease***" and that (page 3, lines 5-6) "*In especially preferred embodiments, the composition comprises* an *anti-redeposition agent and/or sulfonated polymer*".

Moreover, after a generic disclosure of suitable proteases on page 12, the description contains (page 13, second full paragraph) the following wording which is in accordance with the previously cited page 2: "*... a mixture of two or more proteases may be used, such* ***mixtures comprising at least one low temperature protease*** *are preferred for use herein.* ***A mixture of proteases*** *can contribute to enhanced cleaning ... and provide superior shine benefits,* ***especially when used in conjunction with an anti-redeposition agent and/or sulfonated polymer***".

Thus, for the board, the original description contains a pointer to the use of two different proteases (a low temperature protease and a high temperature protease)

in combination with a sulfonated polymer but it does not disclose directly and unambiguously the combination of a low temperature protease as sole protease with a sulfonated polymer, let alone with the preferred amylase of pages 8 and 9.

Moreover, the single example of the application as filed neither identifies the amylase nor the protease used, so that it is not possible to derive therefrom a pointer to the specific combination of amylase and protease as claimed.

5.1.2 The board thus concludes that the original description does **not** contain a direct and unambiguous disclosure of a composition comprising a low temperature protease as sole protease in combination with the other features of claim 1 of this request.

Claim 1 thus extends beyond the content of the disclosure as originally filed and contravenes the requirements of Article 123(2) EPC.

5.2 Claim 1 according to **auxiliary request III** differs from that according to auxiliary request II in that it requires that the amount of active protease is at least 1.5 mg per gram of composition.

Since this claim 1 contains otherwise the same combination of protease, amylase and sulfonated polymer as claim 1 of auxiliary request II, it contravenes the requirements of Article 123(2) EPC for the same reasons.

5.3 Claim 1 according to **auxiliary request IV** differs from that according to auxiliary request II in that it requires that the low temperature protease comprises

specific mutations. Even though this feature corresponds to one of the most preferred low temperature proteases according to the original disclosure (page 14, mutation (i)), its combination with all other features of claim 1 is also **not** directly and unambiguously disclosed in the original documents for the same reasons given above.

Claim 1 of this request thus contravenes the requirements of Article 123(2) EPC.

6. Since none of the appellant's requests complies with the requirements of the EPC, its appeal cannot succeed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated