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**Datasheet for the decision
of 22 October 2019**

Case Number: T 0970/16 - 3.3.06

Application Number: 08869755.2

Publication Number: 2235154

IPC: C11D3/386

Language of the proceedings: EN

Title of invention:

USE OF A CELLULASE TO IMPART SOIL RELEASE BENEFITS TO COTTON
DURING A SUBSEQUENT LAUNDERING PROCESS

Patent Proprietor:

The Procter & Gamble Company

Opponents:

Reckitt Benckiser (Brands) Limited
Henkel AG & Co. KGaA
UNILEVER PLC/ UNILEVER N.V.
Danisco US Inc.
Novozymes A/S

Headword:

Soil release benefits / PROCTER & GAMBLE

Relevant legal provisions:

EPC Art. 83, 108

Keyword:

Admissibility of opponent 1' appeal (no) - missing statement
of grounds

Sufficiency of the disclosure (all requests) : (no)

Decisions cited:

T 0123/06

Catchword:



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Case Number: T 0970/16 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 22 October 2019

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
22 February 2016 concerning maintenance of the
European Patent No. 2235154 in amended form.**

Composition of the Board:

Chairman P. Ammendola
Members: L. Li Voti
C. Heath

Summary of Facts and Submissions

- I. The present appeals of the patent proprietor and of the opponents 2 and 5 are against the decision of the opposition division concerning the maintenance of the European patent n° 2 235 154 in amended form on the basis of auxiliary request 7, filed during oral proceedings.
- II. Opponent 1 also lodged an appeal against the decision of the opposition division but did not file any statement of grounds.
- III. In its grounds of appeal, dated 4 July 2016, the patent proprietor defended the patent as granted and filed eleven sets of amended claims as auxiliary requests 1 to 11. Moreover it filed an experimental report as Annex B (in the following referred to as X29').
- IV. With their grounds of appeal and their replies to the patent proprietor's grounds of appeal the opponents 2 and 5 maintained objections inter alia against the sufficiency of the disclosure and cited in particular the experimental report X29, filed as Annex A by the patent proprietor during opposition proceedings on 23 September 2013.
- V. Opponent 4, party as of right, submitted in its reply to the patent proprietor's grounds of appeal inter alia that the invention was not sufficiently disclosed.
- VI. With letter dated 5 December 2016 the patent proprietor filed auxiliary requests 12 to 14.

- VII. Following the board's preliminary opinion opponent 1 announced with letter of 22 July 2019 that it would not be represented at the oral proceedings.
- VIII. The patent proprietor replied to the board's preliminary opinion with its reply of 4 October 2019 including some drawings.
- IX. With letter of 14 October 2019 opponent 5 commented the latest patent proprietor's submissions.
- X. At the oral proceedings before the board sufficiency of the disclosure and in particular documents X29 and X29' were discussed.
- XI. The final requests of the parties were the following:

The appellant/patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request), auxiliarily on the basis of anyone of auxiliary requests 1 to 11, filed with letter of 4 July 2016, or of auxiliary requests 12 to 14, filed with letter of 5 December 2016.

The appellants/opponents 2 and 5 requested that the decision under appeal be set aside and the patent be revoked. Opponents 3 and 4, parties as of right, also requested that the patent proprietor's appeal be dismissed.

- XII. Claim 1 as granted (**main request**) reads as follows:

"1. Use of a cellulase to impart soil release benefits to cotton during a subsequent laundering process."

Claim 1 according to **auxiliary request 1** differs from claim 1 according to the main request in that it contains the following additional wording:

"... wherein the cellulase modifies the fabric surface during the laundering process so as to improve the removal of soils adhered to the fabric after the laundering process during wearing and usage of the fabric, in subsequent wash cycles."

Claim 1 according to **auxiliary request 2** differs from claim 1 according to auxiliary request 1 in that it reads: *"1. Use of a cellulase to impart soil release benefits to cotton **fabric** ~~during a subsequent laundering process,~~ wherein the cellulase modifies the fabric surface during ~~the~~ **a** laundering process..."* (amendments put in evidence by the board).

Claim 1 according to **auxiliary request 3** differs from claim 1 according to auxiliary request 1 insofar as it contains the following additional wording:

"...wherein the cellulase is a glycosyl hydrolase having enzymatic activity towards amorphous cellulose substrates, wherein the cellulase has endo beta 1,4-glucanase activity and a structure which does not comprise a class A carbohydrate binding module and the glycosyl hydrolase is selected from GH families 5, 7, 12, 16, 44 or 74."

Claim 1 according to **auxiliary request 4** differs from claim 1 according to auxiliary request 3 in that *"the glycosyl hydrolase is selected from GH families 5, 7 or 44."*

Each claim 1 according to **auxiliary requests 5 or 6** differs from claim 1 according to auxiliary request 3 or 4, respectively, in that it contains the following additional wording: "*...wherein the cellulase is used at a concentration of 0.02ppm to 0.5ppm in the wash liquor during the laundering process.*"

Each claim 1 according to **auxiliary requests 7-10** differs from claim 1 according to auxiliary requests 3-6, respectively, in that they read: "*1. Use of a cellulase to impart soil release benefits to cotton **fabric** during a subsequent laundering process; wherein the cellulase modifies the fabric surface during the a laundering process...*" (amendments put in evidence by the board).

Claim 1 according to **auxiliary request 11**, corresponding to the auxiliary request 7 upheld by the opposition division, reads as follows:

"1. Use of a cellulase to impart soil release benefits to cotton during a subsequent laundering process; wherein the cellulase modifies the fabric surface during the laundering process so as to improve the removal of soils adhered to the fabric after the laundering process during wearing and usage of the fabric, in subsequent wash cycles; wherein the cellulase is a glycosyl hydrolase having enzymatic activity towards amorphous cellulose substrates, wherein the cellulase has endo beta 1,4-glucanase activity and a structure which does not comprise a class A carbohydrate binding module and the glycosyl hydrolase is selected from GH family 44."

Claim 1 according to **auxiliary request 13** differs from claim 1 according to auxiliary request 11 in that it

contains the following additional wording: "...wherein the cellulase is used at a concentration of 0.02ppm to 0.5ppm in the wash liquor during the laundering process."

Each claim 1 according to **auxiliary requests 12 or 14** differs from claim 1 according to auxiliary request 11 or 13, respectively, in that it reads: "1. Use of a cellulase to impart soil release benefits to cotton **fabric** ~~during a subsequent laundering process,~~ wherein the cellulase modifies the fabric surface during ~~the a~~ **laundry process...**" (amendments put in evidence by the board).

Reasons for the Decision

Opponent 1's appeal - Admissibility

1. Opponent 1 lodged an appeal against the decision of the opposition division but did not file any statement of grounds. Therefore, its appeal does not comply with the requirements of Article 108 EPC and is not admissible. Opponent 1 thus is party as of right.

Patent proprietor's auxiliary request 11 - Sufficiency of the disclosure (Article 83 EPC)

2. Claim 1 according to the patent proprietor's auxiliary request 11 concerns the use of a glycosyl hydrolase having enzymatic activity towards amorphous cellulose substrates and selected from GH family 44, which cellulase has endo beta 1,4-glucanase activity and a structure which does not comprise a class A carbohydrate binding module, in a laundering process.

According to claim 1 the GH44 cellulase is used "to impart soil release benefits to cotton during **a subsequent** laundering process." Since claim 1 is a use claim the effect to be achieved by the use of the glycosyl hydrolase is a technical feature of the claim.

According to the claim the use of the cellulase in a laundering process brings about a modification of the fabric surface and a consequent improved removal in subsequent wash cycles of soils adhered to the fabric after the laundering process with the cellulase, during wearing and usage of the fabric.

Claim 1 thus encompasses a use wherein the soil release benefits, and thus the modification of the cotton fabric surface and the consequent improvement in soil removal in subsequent wash cycles, are achieved already after one single laundering process with a GH44 cellulase.

3. It is established jurisprudence of the boards of appeal (Case law of the boards of appeal of the EPO, 9th edition 2019, II.C.1) that the requirements of sufficiency of the disclosure are met if the invention as defined in the claims can be performed by a person skilled in the art in the whole area claimed without undue burden, using common general knowledge and having regard to information given in the application as a whole.
4. The patent in suit (paragraph [0012]) identifies the GH44 family glycosyl hydrolases as being the preferred cellulases of the invention and states (page 2, lines 53-54) that such glycosyl hydrolases are known, for example from WO 01/62903 (document X16 in the present proceedings).

Moreover, it discloses (paragraph [0014]) the concentration of cellulase to be used and describes in examples 1-28 suitable laundry detergent compositions. The description does not contain further information or examples concerning the achievement of the alleged soil release benefits, which is a technical feature of claim 1 at issue.

Also the description of the hypothetical mechanism underlying the achievement of these soil release benefits contained in paragraph [0002] of the patent, reading "*the inventors believe that the cellulase increase the micro-porosity of the cotton fibres during the laundering process leading to improved removal of soils adhered to the fabric after the laundering process during wearing and usage of the fabric, in subsequent wash cycles*", does not add any further information which would not be already contained in the wording of claim 1, as this wording has been incorporated almost word for word into claim 1 at issue reading: "*the cellulase **modifies the fabric surface** during the laundering process so as to improve the removal of soils adhered to the fabric after the laundering process during wearing and usage of the fabric, in subsequent wash cycles*".

5. The opponents have submitted that the claimed invention is not sufficiently disclosed as the description of the patent does not contain any guidance enabling the skilled person to achieve without undue burden the required soil release benefits across the whole area claimed and they referred in particular to the evidence contained in experimental report X29.

5.1 X29 describes experiments which are considered by the patent proprietor to be suitable for demonstrating the

provision of soil release benefits to cotton by laundering cotton textile with a composition comprising a cellulase, in particular a glycosyl hydrolase of family GH 44 according to claim 1 at issue. In these tests the cotton textile was laundered repeatedly with a detergent composition (formulation 1) very similar to that of example 9 of the patent in suit and with the addition of 0.072ppm of the cellulase XYG 1006, belonging to the family GH44 (an amount of cellulase in accordance with that of paragraph [0014] of the patent and claim 7 of the request at issue). Therefore the use tested in X29 reflects the guidance given in the description of the patent in suit which concerned only the type of cellulase, its concentration and the type of laundry detergent composition to be used.

In X29 the cotton textile was laundered 4, 8 or 12 times with such a composition comprising the cellulase and with a reference composition without the cellulase as a pretreatment before being stained with six different stains and laundered again with the same detergent composition but without the cellulase at the temperature of 32°C. The experiment was carried out on two types of fabrics with a total of 8 replicates. Thereafter, the stain removal index (SRI) was measured in order to quantify the difference in soil release performance (Δ SRI) on fabrics with a varying wash cycle history of the two formulations tested (with and without cellulase).

It is directly apparent from the Δ SRI values reported in tables 1 and 2 that after 4 pretreatments no significant improvement in stain removal was obtained on both types of fabrics and that significant improvements were obtained on all tested stains only

after 12 pretreatments and only on woven cotton but not on knitted cotton.

It appears thus that the use of a cellulase according to claim 1 at issue under the conditions used in X29 is not able to impart soil release benefits when cotton is pretreated 4 times with the cellulase containing composition. Therefore according to these tests no modification of the fabric surface or no sufficient modification of the fabric surface was achieved for imparting the required soil release benefits. Hence no soil release benefits would be obtained also by applying less than 4 pretreatments as encompassed by claim 1 at issue which includes a use with only one single laundering step (pretreatment).

5.2 The patent proprietor submitted that X29 would nevertheless show the required soil release benefits improvement. According to the patent proprietor all the measured Δ SRI values are preceded by a plus sign, indicating thus at least a trend towards improved soil removal, as it can be recognised by drawing a line across the measured experimental values as shown in the drawing enclosed on page 8 of the letter dated 4 October 2019.

However, the SRI values measured in X29 are obtained by using 8 replicates and a statistical analysis of the measurements in order to determine the significance of the experimental results. Since the Δ SRI values measured according to this analysis at least for the case with 4 pretreatments are not significant, these values, even bearing a plus sign, cannot be considered to represent an experimentally based credible improvement. Moreover, the significance of the measured values is not considered in the proprietor's drawing

submitted with letter of 4 October 2019 which just represents a line drawn across the average of the measured Δ SRI values considered as they were significant.

Hence in the board's view X29 shows without any doubt that under the conditions used the cellulase does not impart soil release benefits as required by claim 1 at issue when cotton is pretreated 4 times or less with the cellulase containing composition.

- 5.3 The proprietor also argued that even though the required soil release improvement would not be clearly visible from the tests of X29, a significant improvement would be detectable if the same experimental report were repeated by increasing the number of replicates so that also smaller increments in Δ SRI could be statistically significant. According to the proprietor the opponents did not bring any evidence to the contrary and did not discharge their burden of proof.

The board notes that even though the burden of proof that the description does not give sufficient guidance to the skilled person to perform the invention throughout its whole breadth without undue burden lies normally on the opponent, the opponents, which indeed did not file themselves any evidence, have in the present case discharged their burden of proof by relying on the available evidence X29 and by plausibly arguing that common general knowledge would not enable the skilled person to realize the disputed benefits (see also Case law of the boards of appeal of the EPO, 9th edition 2019, II.C.9, page 394).

The board remarks moreover that, even though a skilled person, being unsatisfied with the obtained results, could decide to increase the sensitivity of the test in order to investigate whether a not yet discernible improvement had in fact been achieved, the outcome of such a statistical modification of the test would not necessarily result in significant positive Δ SRI values. The proprietor's allegation has in fact not been supported by any evidence. Therefore, the board cannot accept the proprietor's argument in this regard.

- 5.4 The patent proprietor on appeal filed a set of experiments as document X29' wherein a similar test as in X29 was carried out with a greater concentration (0.25 ppm) of the same cellulase XYG 1006 but with a different laundry composition (Ariel liquid) and by using a higher laundering temperature (40°C). In this test only four stains and only two of the stains of X29 were evaluated. This test appears indeed to show an improvement in soil release benefits by the use of the cellulase XYG 1006. However, by considering both sets of tests X29 and X29', it can only be concluded that the results shown in X29 are also credible and the achievement of the required effect does not depend solely on the used cellulase but may depend also on other factors, including the concentration of enzyme used, the temperature of the wash, the laundry composition used and the number of pretreatments.

Therefore, in the board's view the experiments of X29 clearly show that, by using a preferred concentration of the preferred cellulase and by using a detergent composition very similar to one exemplified in the patent in suit, no soil release benefits can be achieved on cotton after 4 or less pretreatments under the conditions used.

6. Since the description of the patent did not contain any further guidance it remains thus to be decided whether the skilled person would be able to perform the invention without undue burden across the entire breadth of the claims by using common general knowledge.

6.1 Even accepting for the sake of argument in the proprietor's favour, that a skilled person, making use of his common general knowledge, could try to increase the laundering temperature or the amount of cellulase in order to optimize the enzymatic effect, it is to be underlined that the required technical effect is due in the present case to a hypothetical mechanism not yet being part of common general knowledge as stated in the patent (paragraph [0002]). Therefore, the skilled person would not be able to find any further guidance in common general knowledge leading him necessarily and directly towards success through the evaluation of the initial failure shown in X29.

Hence, the skilled person, in view of the unsuccessful results of X29, would be obliged to start a research program by trying not only various laundering temperatures but also combinations of particular cellulases and enzyme concentrations and different types of laundry composition and even modifying the number of pretreatments. Therefore, the skilled person, by considering the teaching of the patent supplemented with his common general knowledge and with a reasonable amount of experimentation would not be able to carry out the invention without undue burden across the whole claimed area.

7. The board remarks also that it is established jurisprudence (Case law of the boards of appeal of the EPO, 9th edition 2019, II.C.6.7, page 369) that in the case of broad claims as the present ones, lacking features which are apparently essential for realizing the invention throughout its whole area, and in the absence of guidance in the description leading necessarily and directly towards success through the evaluation of initial failure, the claimed invention has to be considered not to be sufficiently disclosed already on this ground (see for example T 123/06, point 2.2 of the reasons).
8. The board thus concludes that the claimed invention lacks sufficiency of the disclosure (article 83 EPC).
9. Auxiliary request 13
 - 9.1 Claim 1 according to auxiliary request 13 differs from claim 1 according to auxiliary request 11 only in that it specifies that the amount of cellulase used is within the range of 0.02 to 0.5 ppm. However, this range of concentrations encompasses the concentration used in X29 discussed above. Therefore, for the same reasons put forward above the invention of claim 1 according to auxiliary request 13 lacks sufficiency of the disclosure (article 83 EPC).
10. Main request and auxiliary requests 1 to 10, 12 and 14.
 - 10.1 It is not in dispute that the same conclusion reached above as regards sufficiency of the disclosure (article 83 EPC) applies mutatis mutandis to all other requests as claim 1 according to these requests is broader (main request or auxiliary requests 1-10) or substantially

identical (auxiliary requests 12 and 14) to claim 1 according to auxiliary requests 11 or 13.

11. Conclusion

11.1 For the reasons exposed above the patent proprietor's main request and the auxiliary requests 1 to 14 do not comply with the requirements of article 83 EPC and are not allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



A. Pinna

P. Ammendola

Decision electronically authenticated