Internal distribution code:

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

Datasheet for the decision of 9 December 2019

Case Number: T 1902/16 - 3.3.06

Application Number: 09726019.4

Publication Number: 2254982

IPC: C11D3/386, C11D17/00

Language of the proceedings: EN

Title of invention:
DETERGENT COMPOSITION COMPRISING AN ENZYME TRIGGERED RELEASE SYSTEM

Patent Proprietor:
Unilever N.V.
Unilever PLC, A Company Registered in England and Wales under Company no. 41424

Opponent:
Henkel AG & Co. KGaA

Headword:
Triggered release/Unilever

Relevant legal provisions:
RPBA Art. 12(4)
EPC Art. 54, 56, 84

Keyword:
Late-filed evidence - submitted with the statement of grounds of appeal
Novelty - (no)
Inventive step - (no)

Decisions cited:
T 0197/10

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 1902/16 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 9 December 2019

Appellant: (Patent Proprietor 1)	Unilever N.V. Weena 455 3013 AL Rotterdam (NL)
Appellant: (Patent Proprietor 2)	Unilever PLC, A Company Registered in England and Wales under Company no. 41424 Unilever House 100 Victoria Embankment London EC4Y 0DY Greater London (GB)
Representative:	Brooijmans, Rob Josephina Wilhelmus Unilever Patent Group Bronland 14 6708 WH Wageningen (NL)
Appellant: (Opponent)	Henkel AG & Co. KGaA Henkelstrasse 67 40589 Düsseldorf (DE)
Representative:	dompatent von Kreisler Selting Werner - Partnerschaft von Patent- und Rechtsanwälten mbB Deichmannhaus am Dom Bahnhofsvorplatz 1 50667 Köln (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 13 June 2016 maintaining European Patent No. 2254982 in amended form.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	S. Arrojo
	C. Heath

Summary of Facts and Submissions

I. The present appeals, filed by both the patentee (from now on "appellant 1") and the opponent (from now on "appellant 2"), lie from the interlocutory decision of the opposition division to maintain European patent No. 2 254 982 in amended form on the basis of the claims according to the auxiliary request dated 5 February 2016.

II. Appellant 1 requested to set aside the said decision and to maintain the patent as granted, or auxiliarly, in amended form on the basis of the claims according to one of auxiliary requests 1-5 dated 5 February 2016.

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

"1. A laundry detergent composition comprising a particle for triggered release of a rinse benefit agent, said particle comprising:
a) a rinse benefit agent,
b) an enzyme, and
c) a water-insoluble substrate for said enzyme,
wherein the rinse benefit agent and the enzyme are surrounded by a barrier layer comprising the substrate."

Claim 1 of **auxiliary request 1** (i.e. of the version as upheld by the opposition division) further requires that *"the mean particle weight is between 0.01 mg to 100 mg".*

Claim 1 of **auxiliary request 2** corresponds to that of the main request with the additional requirement that *"the particles release more than 60% of the rinse benefit agent in the rinse phase of a washing process."*

Claim 1 of **auxiliary request 3** corresponds to that of the main request with the additional requirement that *"the enzyme which acts on the substrate is selected from the group consisting of lipases, cellulases, cutinases and mixtures thereof."*

Claim 1 of **auxiliary request 4** corresponds to that of the main request with the additional requirement that *"the water-insoluble substrate is selected from the group consisting of monoglycerides, diglycerides, triglycerides, wax esters and mixtures thereof."*

Claim 1 of **auxiliary request 5** corresponds to that of the main request with the additional requirement that *"the barrier layer contains a water-insoluble continuous layer."*

IV. With its grounds of appeal appellant 2 objected to claim 1 as upheld by the opposition division under Articles 83, 54 and 56 EPC; in particular lack of novelty and inventive step objections were raised in view of the content of documents **D1** (EP 1 479 755 A1) and **D6** (US 5 733 763). Appellant 2 further requested to admit into the proceedings the following new documents:

D11: Enzymes in Detergency, 1997, pages 133 bis 148

D12: Internet Information of the product Arbocel

D13: Sogias et al., "*Exploring the factors affecting the solubility of chitosan in water*", Macromolecular Chemistry and Physics, 211, 426-433 (2010)

D14: Lu et al, "*Preparation of water-soluble chitosan*", Journal of Applied Polymer Science, 91, 3497-3503 (2002).

V. The board issued a communication in preparation for the forthcoming oral proceedings to inform the parties of its preliminary non-binding opinion that claim 1 of the main request was not novel in view of either document D1 or D6; auxiliary requests 1, 4 and 5 were not allowable under Article 56 EPC in view of at least document D6 combined with common general knowledge; auxiliary request 3 was not allowable under Article 54 EPC in view of document D6; and auxiliary request 2 did not meet the requirements of Article 84 EPC.

VI. In reply to this communication, appellant 1 withdrew its request for oral proceedings and the board decided to cancel the oral proceedings.

VII. Since the board is still of the opinion that none of the requests is allowable (see below), and as appellant 1 (patentee) has withdrawn its request for oral proceedings, the board is in a position to issue a written decision without holding oral proceedings.

Reasons for the Decision

1. Admittance of documents D11-D14 - Article 12(4) RPBA

These documents being used to illustrate the meaning of certain features (see below) disclosed in documents D1 and D6, the board sees no reason not to admit them under Article 12(4) RPBA.

2. Main request - Novelty

2.1 The board has concluded that the ground under Article 100(a) in relation to Article 54 EPC prejudices the maintenance of the patent as granted for the following reasons.

2.2 Interpretation of claim 1

2.2.1 During opposition proceedings the feature *"water-insoluble substrate"* in claim 1 was interpreted in the light of the description (par. [0021] of the patent in suit) as implying a restriction to substrates having a solubility lower than 1 g/L at 25°C in water at pH 7.

2.2.2 While, under certain circumstances, it might be justified to clarify the scope of protection in the light of the description, for the board there is no need to do so when a feature is clear *per se (in claris non fit interpretatio)* **(T 197/10).**

In the present case, the omission in claim 1 of certain factors restricting the meaning of the concept "water-insoluble" (e.g. the temperature or the pH of the aqueous medium) is not considered to render the subject-matter unclear, but simply broadens it to encompass any possible condition which could reasonably be expected within the underlying technical context of washing fluids.

2.2.3 The board also notes that, besides the above-mentioned paragraph [0021], the description also refers to "substantially water-insoluble quaternary ammonium materials" (par. [0056]), such as those having a "solubility in water at pH 2.5 and 20°C of less than 10 g/L", and includes comparative tests conducted at pH 9 (par. [0132]). Thus even within the context of the patent in suit the term "water-insoluble" takes different meanings for different substances and/or under different conditions, which further reinforces the argument that claim 1 should not be narrowly interpreted in the light of the description.

2.2.4 The board therefore concludes that there is no need to consult the description to interpret the feature *"water-insoluble substrate"* in claim 1 (i.e. the information in paragraph [0021] of the patent in suit is not regarded as an explanation but rather as a fall-back position for this feature).

2.2.5 Consequently, the feature *"water-insoluble substrate"* in claim 1 encompasses any substrate which does not readily dissolve in water under the conditions at which the washing process takes place.

2.3 Document D1

2.3.1 This document discloses a cleaning composition comprising a secondary substance (e.g. a rinse aid (claim 7)) to be released during the rinse cycle and not during the wash cycle (claim 1) and a degrading enzyme (claim 12), wherein the secondary substance is surrounded by a release controlling means formed by a layer of chitosan having a degree of acetylation in the range of 30% to 80% (claims 1, 4 and 17).

In D1 the triggered (i.e. delayed) release of the secondary substance is achieved by the changing solubility of chitosan at different pH values. In particular, the acetylation degree of the chitosan is adjusted so that the barrier is water-insoluble at the pH of washing cycles and water-soluble at the pH of rinse cycles (par. [0053]-[0055]).

In view of the above-explained broad interpretation of the feature *"water-insoluble substrate"* and of the fact that the chitosan barrier proposed in D1 is water-insoluble under the pH conditions of the washing cycle, the board has concluded that this substance can be

regarded as a water-insoluble substrate in the sense of claim 1.

Furthermore, the board notes that according to claim 1 of D1, the chitosan layer has a degree of acetylation of 30% to 80%. In view of document D13 (figure 1) it is clear that chitosan having acetylation values in the order of 30% would not be water-soluble at pH values higher than 6. Thus, document D1 would be regarded as anticipating the feature *"water-insoluble substrate"* (and therefore the subject-matter of claim 1) even if this feature were narrowly interpreted.

2.3.2 Appellant 1 referred to example 4C of D1 (with an acetylation degree of chitosan of 46.9%) and to the indication in par. [0057] of this document that, at this acetylation degree, chitosan was soluble in water at "pH values up to 8.5". According to appellant 1 this would imply that the layer in D1 was not a *"water-insoluble substrate"* in the sense of the patent in suit.

2.3.3 This argumentation fails to convince because the teachings of D1 are not restricted to an acetylation degree of 46.9% as described in example 4C, but to a range of 30-80% as defined in claim 1, and at the lower end of this range the chitosan is water-insoluble at pH values higher than 6-6.5. Furthermore, the feature *"water-insoluble"* in claim 1 at issue is not restricted to any particular pH value, so in principle any substance being water-insoluble at a pH which could reasonably be expected in a washing fluid would fall within the claimed invention. It is also noted that the comparative tests in par. [0132], table 1 of the patent in suit are performed at pH 9, so even the chitosan of example 4C (with an acetylation degree of 46.9%) would

be water-insoluble under the experimental conditions used in those tests.

2.4 Document D6

2.4.1 In its example 12, D6 discloses particles with a core containing Savinase ® (i.e. a rinse benefit agent) and a "sustained release coating" shell comprising cellulolytic enzyme Celluzyme ® and the fibrous cellulose "Arbocel BC200" as substrate. This sustained release barrier is described as providing a sequential release of the enzymes, such that the release of the enzyme in the core takes place after the release of the enzyme in the shell (D6: column 2, lines 50-54).

According to D11 (page 138) and D12, the substrate "Arbocel BC200" is water-insoluble and can be used as substrate for Celluzyme ®.

2.4.2 The board therefore considers that the substrate in example 12 of D6 is water-insoluble and forms a barrier surrounding the enzymes Celluzyme ® and Savinase ® in the sense of claim 1, and that this barrier is configured as a "sustained release coating" which effectively provides the defined effect of a triggered release of the rinse benefit agent (or of a substance suitable to be used as rinse benefit agent).

2.4.3 The opposition division found that the wording *"the rinse benefit agent and the enzyme are surrounded by a barrier layer comprising the substrate"* in claim 1 unambiguously required that both the rinse benefit agent and the enzyme were arranged in separate layers with respect to the substrate. Since in example 12 of D6 the enzyme was part of the substrate, it would not be surrounded by it in the sense of claim 1.

2.4.4 The board disagrees with this finding, because according to the patent in suit (par. [0040]) *"the barrier layer comprises the substrate and may comprise the enzyme"*, which effectively implies, as pointed out by appellant 2, that the term "surrounding" should be interpreted as "enclosing", which is exactly what par. [0019] of the patent in suit does when it defines the enzyme as being *"enclosed in (surrounded by) a barrier layer comprising the substrate"*.

In fact, the board considers that in view of the teachings of the patent in suit (par. [0015] and [0040]), the provision of the enzyme as part of the substrate layer constitutes a preferred embodiment, because the ultimate goal of the invention is to trigger a reaction between the enzyme and the substrate (as a result of lower surfactant concentrations), for which the presence of the enzyme within the substrate layer is clearly advantageous.

2.5 The board therefore concludes that the subject-matter of claim 1 is anticipated by any one of documents D1 or D6.

3. Auxiliary request 1 - inventive step

The board, applying the problem-solution approach, has concluded that auxiliary request 1 is not allowable under Article 56 EPC for the following reasons.

3.1 Document D6 is regarded as the closest prior art because this document explicitly deals with triggered (i.e. timed) release of components of a detergent composition. Furthermore, the particle sizes of the granules are similar to those proposed in the patent in suit.

The subject-matter of claim 1 differs from the content of D6 in that the mean particle weight is between 0.01 and 100 mg.

3.2 Problem solved

There is no indication in the patent in suit which could lead to the conclusion that the mean particle weight provides any particular technical effect. The board therefore concludes that the only problem successfully solved by the invention is that of providing an alternative composition.

3.3 Obviousness

The granules in document D6 have particle sizes of 100 to 1000 microns (see column 6, lines 12-15).

Assuming a spherical form of the granules (as suggested in column 6, line 21 of D6), the particles will have volumes of the order of 5×10^{-7} cm^3 (particle size 100 microns) to 5×10^{-4} cm^3 (particle size 1000 microns). Thus, for densities of 0.5 g/cm^3 to 2 g/cm^3 (regarded as representing a conventional range) the larger particles in D6 would have a weight of the order of 0.25 - 1 mg.

While these calculations are based on information which is not directly and unambiguously derived from D6 (e.g. the density of the particles), it suffices to show that the defined mean weight of 0.1 to 100 mg represents a broadened range of the granules that would be obtained in D6 by working within conventional density ranges.

Thus, the board considers that the subject-matter of claim 1 inevitably results from carrying out the

invention described in D6 within conventional working ranges.

3.4 The board thus concludes that the subject-matter of claim 1 is not inventive in view of the combination of document D6 with common general knowledge.

4. Auxiliary request 2 - clarity

4.1 The board has concluded that this request is not allowable under Article 84 EPC, the subject-matter of claim 1 being considered to be unclear because the feature *"the particles release more than 60% of the rinse benefit agent in the rinse phase of a washing process"* attempts to define the scope of protection in terms of a result to be achieved instead of referring to the technical features required for achieving this effect.

4.2 Furthermore, the above definition in terms of a result to be achieved also gives rise to a problem of demarcation because the result to be achieved partially depends on external factors such as the duration and conditions of the wash and rinse cycles. Thus, whether a given composition falls within the scope of protection would depend on issues which are not defined in the claim, leaving the skilled person in doubt as to whether such composition infringes the patent or not.

5. Auxiliary request 3 - novelty

The board has concluded that this request is not allowable under Article 54 EPC.

5.1 Claim 1 at issue corresponds to that of the main request with the additional requirement that *"the*

enzyme which acts on the substrate is selected from the group consisting of lipases, cellulases, cutinases and mixtures thereof".

5.2 The composition of example 12 in D6 (considered novelty destroying for the main request) contains Celluzyme ® (i.e. a cellulase).

5.3 Thus, claim 1 of this request is not novel in view of example 12 of document D6.

6. Auxiliary request 4 - inventive step

The board has concluded that this request is not allowable under Article 56 EPC.

6.1 Document D6 is regarded as the closest prior art because it discloses both the arrangement with a *"sustained release coating"* (i.e. barrier layer for triggered release) surrounding an enzyme (example 12) and the use of waxes, mono-, di- or triglycerides for this coating (claims 12 or 15).

The subject-matter of claim 1 differs from the content of this document, in particular from the composition in example 12, in that waxes, mono-, di- or triglycerides are selected for the barrier layer.

6.2 Problem solved

According to the patent in suit (par. [0015]) the problem to be solved is to provide a "triggered release system which works especially well" to retain the "rinse benefit agent during the wash stage and release it during the subsequent rinse stage".

6.3 Success of the solution

In view of comparative tests in table 1 of the patent in suit (par. [0132]), it is clear that only certain substrate-enzyme pairs provide the desired technical effect of delaying the release of the enzyme until the rinse cycle. Since the subject-matter of claim 1 does not specify the type of enzyme and explicitly includes waxes, it encompasses enzyme-substrate pairs which would be incapable of providing the desired technical effect of an effective triggered release of the enzyme.

According to table 1 of the patent in suit, the combinations of bees, carcanuba and candelilla waxes with lipase or cutinase give rise to an "activity index" of zero or almost zero. Since this index measures the difference in net enzymatic activity during the rinse and wash cycles (see paragraph [0131] of patent in suit), these low values imply a similar degree of enzyme release in the different washing cycles, thus indicating that the substrate is ineffective in delaying the release of the enzyme.

The board therefore concludes that claim 1 does not successfully solve the above-mentioned technical problem, which therefore needs to be reformulated in less ambitious terms, namely as providing an alternative laundry detergent composition for releasing enzymes during washing cycles.

6.4 Obviousness

In view of the above problem, all that is required to render the claim obvious is that the distinguishing feature is known in the underlying technical field as an alternative having an equivalent or similar function

to the corresponding feature in the closest prior art and that its incorporation into the latter would not lead to technical difficulties or to negative or undesired effects.

In the present case, the selection of waxes, mono-, di- or triglycerides for the barrier layer is taught in document D6 itself as a preferred embodiment (claims 12 or 15). The selection of these substances for the composition of example 12 in D6 is therefore regarded as an obvious choice for the skilled person when looking for alternative compositions for releasing enzymes during washing cycles.

6.5 The board therefore concludes that the subject-matter of claim 1 is not inventive in view of the composition in example 12 of document D6 combined with claims 12 or 15 of this document.

7. Auxiliary request 5 - Article 56 EPC

The board has concluded that this request is not allowable under Article 56 EPC.

7.1 Example 12 of document D6 is regarded as the closest prior art. Since the barrier layer in this example is not explicitly described as a continuous barrier, the subject-matter of claim 1 differs from this example in that *"the barrier layer contains a water-insoluble continuous layer".*

7.2 Problem solved

In the absence of further indication in the patent, it is apparent that the provision of a continuous barrier solves the problem of preventing premature release of

the inner components of the detergent composition into the washing fluid.

7.3 Obviousness

Since the barrier layer in document D6 is equally intended to delay the release of the inner substances, it would be obvious to form it as a continuous barrier. In other words, it would be technically unreasonable to build a barrier with discontinuities in D6, as this would complicate the manufacturing process and at the same time hinder or worsen the sequential release of components which document D6 strives to achieve.

7.4 The board therefore concludes that the subject-matter of claim 1 is not inventive in view of example 12 of document D6 combined with common general knowledge.

8. As none of the sets of claims underlying the proposed requests meets the requirements of the EPC, the patent cannot be maintained.

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 J.-M. Schwaller

Decision electronically authenticated