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**Datasheet for the decision
of 10 October 2012**

Case Number: T 0921/10 - 3.3.06
Application Number: 03447205.0
Publication Number: 1502944
IPC: C11D 17/00, C11D 3/37,
C11D 3/22, C11D 3/20
Language of the proceedings: EN

Title of invention:

Aqueous liquid laundry detergent compositions with visible beads

Patentee:

THE PROCTER & GAMBLE COMPANY

Opponent:

Henkel AG & Co. KGaA

Headword:

Laundry detergent with beads/PROCTER & GAMBLE

Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step: yes"

Decisions cited:

-

Catchword:

-



Case Number: T 0921/10 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 10 October 2012

Appellant: THE PROCTER & GAMBLE COMPANY
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Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 23 February 2010
revoking European patent No. 1502944 pursuant
to Article 101(3) (b) EPC.

Composition of the Board:

Chairman: P.-P. Bracke
Members: P. Ammendola
J. Geschwind

Summary of Facts and Submissions

- I. This appeal is from the decision of the Opposition Division to revoke European patent No. 1 502 944 concerning aqueous liquid laundry detergent compositions with visible beads.
- II. The patent as granted contains fourteen claims. Claim 1 and 14 as thereof (hereinafter **granted claim 1** and **granted claim 14**) read, respectively:

"1. *A heavy-duty liquid detergent composition in the form of an externally-structured, shear thinning, aqueous liquid matrix having dispersed therein a plurality of visibly distinct beads, which composition comprises:*

- A) from 5% to 50% by weight of said composition of a deterative surfactant selected from anionic surfactants, nonionic surfactants, and combinations thereof;*
- B) from 0.1% to 30% by weight of a laundry washing adjunct selected from deterative enzymes, optical brighteners, dye transfer inhibition agents, suds suppressors, deterative soil release polymers, other fabric care benefit agents, and combinations of said laundry washing adjuncts;*
- C) from 0.01% to 1% by weight of an organic external structurant selected from the group consisting of*

i) non-polymeric crystalline, hydroxy-functional materials which form thread-like structuring systems throughout the aqueous

liquid matrix of said composition upon in situ crystallization therein; and which are selected from the group consisting of crystalline, hydroxyl-containing fatty acids, fatty esters or fatty waxes

ii) polymeric structurants selected from polyacrylates, polymeric gums, other non-gum polysaccharides, and combinations thereof, said polymeric structurants imparting shear thinning characteristics to the aqueous liquid matrix of said composition; and
iii) combinations of said external structurant types;

D) from 0.01% to 5% by weight of visibly distinct beads having a diameter ranging from 0.2 mm to 8 mm, each of said beads comprising a liquid core solution comprising an anionic polymeric component and a semipermeable membrane formed by interaction of said anionic polymeric component with a cationic polymeric material and wherein said anionic polymeric component comprises alginate and said cationic polymeric component comprises chitosan or a chitosan derivative said membrane serving to impart osmotic permeability characteristics to said beads such that said beads maintain their structural integrity within the aqueous liquid matrix of said composition but disintegrate without leaving visible residues as a consequence of osmotic water permeability upon aqueous dilution of said composition during washing operations; and
E) from 30% to 75% by weight of water."

and

"14. A heavy-duty liquid detergent composition in the form of an externally-structured, aqueous liquid matrix having suspended therein a plurality of visually distinct beads, which composition comprises:

- A) from 10% to 35% by weight of a deterative surfactant selected from C_{10-16} linear alkylbenzene sulfonates, C_{8-20} alkyl polyethoxylate sulfates containing from 3 to 20 moles of ethylene oxide, C_{8-16} alcohol polyethoxylates containing from 1 to 16 moles of ethylene oxide, and combinations of said surfactants;
- B) from 1% to 10% by weight of a laundry washing adjunct selected from deterative enzymes, optical brighteners, silicone-based fabric care agents, and combinations of said washing adjuncts;
- C) from 0.02% to 0.5% by weight of an external structurant for said aqueous liquid matrix, said structurant comprising a crystalline, hydrogenated castor oil or castor oil derivative;
- D) from 0.1% to 3% by weight of visibly distinct beads having an average diameter ranging from 0.5 to 4 millimeters, each of said beads comprising an alginate core encapsulated with a semi-permeable membrane formed by contacting alginate from said core with a curing solution comprising chitosan;
- E) from 40% to 70% by weight of water; and
- F) from 1% to 30% by weight of an ancillary detergent composition adjunct selected from

stabilizers, builders, solvents, perfumes, dyes or combinations of such ancillary washing ingredients."

Granted claims 2 to 13 define preferred embodiments of the composition of claim 1.

III. The patent had been opposed on the grounds of, *inter alia*, lack of inventive step (Article 100(a) EPC) in view of documents:

(3) = EP-A-1 064 913

and

(7) = "*Laundry Detergents*" by E.Smulders, Wiley VCH Verlag GmbH 2002, pages 108 and 109.

During the opposition proceedings the Patent proprietor filed as Auxiliary Request 2 a single claim identical to claim 14 as granted, renumbered.

IV. The Opposition Division considered, *inter alia*, that the subject-matter of claim 1 as granted as well as that of claim 1 of the then pending Auxiliary Request 2 were novel, but obvious in view of the combination of document (3) with document (7).

In particular, the Opposition Division considered that the prior art of departure was represented by the microcapsules of examples 1 or 2 of document (3) considered in combination with the general disclosure in this citation that these microcapsules were preferably to be used in cosmetics and in laundry

detergent compositions also for aesthetic reasons - e.g. in dye applications - and were storage stable in the presence of surfactants. These microcapsules of the prior art were clearly visible and comprised paraffin oil or squalane which might be regarded as fabric care agents. In the opinion of the Opposition Division they also possessed a liquid core and were reasonably to be expected to disintegrate without leaving visible residue upon dilution during washing operations.

Thus, the objective problem was found that of providing further detergent compositions comprising visible and stably suspended beads which leave no residue on the fabrics after washing.

In the absence of evidence of a surprising effect and since the amounts of surfactants, water and fabric care agents in granted claim 1 were common amounts as e.g. described in Table 26 of document (7), a skilled person starting from document (3) would arrive at the subject-matter of claim 1 as granted without an inventive step.

The Opposition Division found that also the subject-matter of claim 1 of the Auxiliary Request 2 (identical to granted claim 14) only solved the problem of providing an alternative detergent composition.

The Opposition Division considered that:

- document (3) already disclosed the possible use as viscosity modifier of hydrogenated castor oil in amounts of 0-5 wt.%, preferably 0.5-2 wt.%;

- thus, the amount range for the hydrogenated castor oil ingredient in document (3) overlapped with that specified in claim 1 of the Auxiliary Request 2 and a skilled person could also use less than 0.5 wt.% of such viscosity modifier;

- the other ingredients defined in this claim were also usual for detergent compositions and

- no surprising effect had been demonstrated.

The Opposition Division concluded that also the subject-matter of claim 1 of the Auxiliary Request 2 provided an obvious solution to the posed problem.

V. The Patent Proprietor (hereinafter **Appellant**) lodged an appeal against this decision.

It filed with the statement setting out the grounds of appeal an experimental report (hereinafter **ER1**) as well as four sets of amended claims respectively labelled as First to Fourth Auxiliary Requests.

The Opponent (hereinafter **Respondent**) replied with letter dated 12 November 2010.

With a letter of 7 September 2012 the Appellant filed a new technical report (hereinafter **ER2**) and five new sets of amended claims respectively labelled as Fourth to Eighth Auxiliary Requests.

VI. Oral proceedings were held before the Board on 10 October 2012 in the announced absence of the duly summoned Respondent.

VII. The Appellant argued substantially as follows in respect of the patent as granted.

The Opposition Division had erred in arbitrarily assuming that the core of the microcapsules of document (3) was a liquid solution. Indeed, as proved in the ER1 the presence of agar-agar or of the other gel-forming ingredients that were mandatorily present in the compositions of document (3), actually produced the expected gel matrix. Moreover, even in the absence of a precise definition in the patent-in-suit for the physical state possibly indicated by the wording "*liquid core solution*" as used therein, no skilled person would reasonably equate a gel to a liquid solution. In particular, the Respondent's suggestion that the term "gel" normally designated viscoelastic fluids was an unrealistic allegation deprived of supporting evidence.

Hence, the skilled person starting from the microcapsules of document (3) would find neither in this citation nor in document (7) any suggestion motivating the skilled person to conceive beads with a liquid core.

Moreover, the comparative data in the ER2 would prove that the liquid or gel nature of the beads cores was crucial for the reduction of residues on the washed fabrics, at least when washing at low temperatures. Due to the substantial difference in terms of physical state between any gel core of the prior art and any fluid core realistically embraced by the expression "*liquid core solution*" of granted claim 1, the single comparative experiment in the ER2 rendered credible the

achievement of the aimed effect across the whole claimed range.

This effect remained surprising even when considering the heavy-duty laundry compositions disclosed in document (7) which was silent on the possibility of incorporating beads in these compositions, let alone of incorporating beads not containing any gel-forming ingredient.

As to granted claim 14, the Appellant conceded that the definition of ingredient "D)" given therein did not require the core of the beads to be in a fluid state and, thus, would also allow the use of the beads of document (3) as ingredient of the compositions of granted claim 14. Hence, these latter would represent a different invention in respect to that of granted claim 1, i.e. they would solve the different technical problem indicated in paragraph [0067] of the patent-in-suit of providing detergent composition that simultaneously achieved shear-thinning rheology and stability without becoming opaque and, thus, without restricting the beads visibility.

Hence, in the absence of any evidence to the contrary, the Opposition Division had erred in rejecting the then pending Auxiliary Request 2 despite the fact that document (3) and (7) were both completely silent as to the opacity associated to the use of a structurant.

The prior art could not possibly have rendered obvious the subject-matter of granted claim 14 either.

VIII. The Respondent submitted in writing that the Opposition Division had correctly established the lack of inventive step for the subject-matter of granted claim 1, as well for that of granted claim 14.

It stressed the absence of a precise definition of the "*liquid core*" of the beads in the patent-in-suit and argued that the term "gel" would be also used to identify viscoelastic fluids having properties that were intermediate between those of an ideal fluid and those of an ideal solid.

The data in the ER1 would then confirm that the "*liquid core solution*" in the beads according to the patent in suit also was viscoelastic fluid, whose properties were substantially comparable to those of the "gel" contained in the comparative microcapsules according to example 2 of document (3).

Hence, the Appellant's attempt to rely on the liquid core of the beads as a further distinguishing feature of the claimed composition was incorrect.

As to the subject-matter of granted claim 14, the Respondent argued in writing that the structurant required in this claim was disclosed as preferred viscosity regulating agent in document (3) as well. Hence, the problem solved vis-à-vis document (3) was just the provision of an alternative optimized heavy-duty laundry composition containing beads. Any such optimization would however be for the any person skilled in the art a routine process not involving an inventive step.

IX. The Appellant requested that the decision under appeal be set aside and that the opposition be rejected or, in the alternative, that the patent be maintained in amended form on the basis of the First to Third Auxiliary Request filed with the grounds of appeal, or the Fourth to Eighth Auxiliary Requests filed with letter of 7 September 2012.

The Respondent requested in writing that the appeal be dismissed.

Reasons for the Decision

Main request (patent as granted)

The Board is satisfied that the subject-matter of the granted claims is not anticipated in the cited prior art. Since also the Opposition Division has found the subject-matter of the granted claims to be novel and since the Respondent has only raised objections under the provisions of Article 56 EPC, only the issue of inventive step need to be considered in this decision.

1. Article 56 EPC: granted claim 1

Claim 1 as granted (see above Section II of the Facts and Submissions) defines a heavy-duty liquid detergent composition comprising:

from 5% to 50% by weight of certain deterative surfactants (ingredient "A");

from 0.1% to 30% by weight of certain laundry washing adjuncts (ingredient "B");

from 0.01% to 1% by weight of certain organic external structurants imparting shear thinning characteristics (ingredient "C");

from 0.01% to 5% by weight of visibly distinct beads (ingredient "D") having a diameter ranging from 0.2mm to 8mm, and comprising a "*liquid core solution*" and a semipermeable membrane formed by interaction of the anionic polymeric component comprising alginate present in that solution with a cationic polymeric material comprising chitosan or a chitosan derivative

and

from 30% to 75% by weight of water (ingredient "E").

The claim also requires the membrane to impart osmotic permeability characteristics to said beads "D)" such that said beads maintain their structural integrity within the aqueous liquid matrix of the composition but disintegrate without leaving visible residues as a consequence of osmotic water permeability upon aqueous dilution of said composition during washing operations.

1.1 The Board concurs with the findings of the Opposition Division that:

- the subject-matter of granted claim 1 (see paragraphs [0008] to [0010] of the patent-in-suit) aims at rendering available laundry compositions having stably suspended therein aesthetic altering visibly distinct

beads which do not leave residues on fabrics and do not otherwise interfere with the laundering operations that use such products;

- document (3) relates to the same field and describes beads (microcapsules) which possibly comprise fabric care agents (e.g. paraffin oil or squalane) and appear, thus, also suitable for laundry detergent compositions;

and

- the prior art of departure for the assessment of inventive step is therefore reasonably represented by the beads of examples 1 or 2 of document (3) in combination with the general disclosure in this citation that these microcapsules are preferably to be used in, *inter alia*, laundry detergent compositions.

- 1.2 The Respondent has argued that the vague term "gel" used in document (3) would normally identify viscoelastic fluids and, thus, embrace the same sort of materials that the patent-in-suit vaguely describes as "*liquid core solution*" (without providing a precise definition of such wording).

The similarity among the allegedly different forms of aggregation of matter corresponding to the "gel" of document (3) and the "*liquid core solution*" of the patent-in-suit would also be confirmed by the comparable G' and G'' values reported in the ER1 for samples of the two sorts of material.

- 1.2.1 The Board notes however that the G' and G'' values reported in the ER1 are substantially different for the

two samples and that the same ER1 proves that a "*liquid core solution*" sample according to the invention is undisputedly pourable while a "*gel*" sample according to document (3) is not. Hence, the Board has no reason to doubt that the presence of a gel-forming ingredient such as agar-agar in the core of the beads of the prior art actually results in the formation of a "*gel matrix*" (see in document (3) the passages referring to "*Gelbildner*" and "*Matrix*" in claims 1 to 4, as well as in paragraphs [0006] and [0009]).

The Board notes further that the Respondent has provided no evidence in support of its allegation (disputed by the Appellant) that the expressions "*gel*" or "*gel matrix*" are conventionally used for indicating viscoelastic fluids.

- 1.2.2 Hence, the Board concurs with the Appellant that the subject-matter of granted claim 1 differs from the prior art, *inter alia*, in that the core of the beads must be a liquid solution rather than a gel.
- 1.3 The Board notes that the Respondent has filed no written reply to the Appellant's letter dated 7 September 2012 (which is enclosed with the ER2).

Hence the Board has no reason to disregard the fact that, as apparent from the data in ER2, it is the liquid nature of the core material of the beads that ensures that the amount residues on the washed fabrics is lower than that produced when the beads contain a gel core, as in document (3).

Thus, the Board concludes that the subject-matter of granted claim 1 actually achieves across the whole scope of this claim the aimed technical effect of reducing the amount of residues left by the beads of the prior art onto the washed fabrics.

1.4 Already because of the absence of any indication in the available prior art that detergent compositions may comprise beads with a liquid core solution, the Board finds that the subject-matter of granted claim 1 provides a solution to the posed technical problem that is not obvious. Thus, this claim complies with Article 56 EPC.

2. Article 56 EPC: granted claims 2 to 13

The Board notes that the claims 2 to 13 as granted define preferred embodiments of the composition of granted claim 1 and, thus, their subject-matter is not rendered obvious by the prior art for the same reasons indicated above. Hence, also these claims are found to comply with article 56 EPC.

3. Article 56 EPC: granted claim 14

3.1 As conceded by the Appellant too the subject-matter of this claim differs from that of granted claim 1, *inter alia*, in that the definition of ingredient "D)" given in the former does **not** require the core of the beads to be a fluid solution (see above Section II of the Facts and Submissions) and, thus, also allows for the use of the beads of document (3) with a gel core. Hence, the reasoning given above for granted claim 1 is not relevant for granted claim 14.

3.2 The Board notes that granted claim 14 also provides a more restricted definition of, *inter alia*, the external structurant ingredient "C)". According to the claim this ingredient must constitute from 0.02% to 0.5% by weight of the composition and must comprise a crystalline hydrogenated castor oil or castor oil derivative.

The Board concurs with the Respondent that, as also indicated in the decision under appeal, document (3) already discloses the possible use of hydrogenated castor oil as viscosity modifier in amounts of 0-5 wt.%, preferably 0.5-2 wt.%; i.e. the use of such ingredient for the same purpose and in amounts overlapping with that required in claim 14.

3.2.1 However, none of these facts has any bearings on the plausibility of the statement in the patent-in-suit that the subject-matter of this claim actually solves a special technical problem. Indeed, as apparent from the combination of paragraphs [0063] and [0065] to [0067] of the patent-in-suit, castor oil and its derivatives are disclosed as capable of providing stability and shear-thinning rheology at concentrations low enough that the compositions are not rendered so undesirably opaque to impair the beads visibility.

Also the decision under appeal only mentions in general that the patent-in-suit contains no evidence of a surprising effect, but does not identify any reason or evidence depriving of credibility of such statement.

3.2.2 Hence, the Board has no reason to rebut the Appellant's argument that the compositions according to granted claim 14 solve the special technical problem of obtaining a particularly low opacity while retaining satisfactory shear-thinning properties and stability.

3.3 The Board notes that document (3) does not even acknowledge that viscosity modifiers may provide opacity to detergent compositions. Nor is any information as to the opacity possibly produced by viscosity modifiers / structurants derivable from document (7).

Hence, the available prior art cannot possibly render obvious to solve the posed special problem by selecting - among the viscosity modifiers disclosed in document (3) - castor oil or its derivatives and by using an amount of such ingredients that falls in the range indicated in granted claim 14.

Already for this reason the Board finds that also the subject-matter of claim 14 as granted is not rendered obvious by the available prior art and, thus, that also this claim complies with Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:

D. Magliano

P.-P. Bracke