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D E C I S I O N
of 8 November 2005

Case Number: T 0595/04 - 3.3.06

Application Number: 96932242.9

Publication Number: 0859828

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Language of the proceedings: EN

Title of invention:
Delivery Systems

Patentee:
The Procter & Gamble Company

Opponent:
Unilever PLC

Headword:
Perfume delivery system/PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes): no incentive in the prior art for replacing the matrix of the products of the closest prior art with the glassy encapsulating agents of the patent in suit"

Decisions cited:

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Catchword:

-



Case Number: T 0595/04 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 8 November 2005

Appellant:
(Opponent)

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Respondent:
(Proprietor of the patent)

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Representative:

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Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
4 March 2004 concerning maintenance of European
patent No. 0859828 in amended form.

Composition of the Board:

Chairman: P. Ammendola
Members: L. Li Voti
J. Van Moer

Summary of Facts and Submissions

- I. The present appeal is from the decision of the Opposition Division concerning the maintenance in amended form of the European patent no. 0 859 828, relating to a laundry or cleaning composition containing glassy particles comprising perfume.
- II. In its notice of opposition the Opponent sought revocation of the patent on the grounds of Articles 100(a), because of lack of novelty and inventive step of the claimed subject-matter, and of Article 100(c) EPC.

The following documents were referred to *inter alia* in support of the opposition:

- (1): EP-A-57088
- (2): WO-A-9406308
- (3): EP-A-221850
- (4): US-A-3971852
- (5): WO-A-9412613

Amended claims according to three auxiliary requests were filed in writing by the Patent Proprietor under cover of the letter dated 27 January 2004.

- III. In its decision the Opposition Division found that
- the patent in suit complied with the requirements of Article 83 EPC;
 - the subject-matter of claim 1 of the patent as granted lacked novelty;

- the claims according to the then pending first auxiliary request complied with the requirements of Article 123(2) EPC and the claimed subject-matter was novel over the cited prior art;
- the skilled person, even considering the cited documents (1) to (5) in combination, would not have arrived at the subject-matter of claim 1 of the then pending first auxiliary request;
- in particular, the prior art did not suggest the use of one of the glassy materials selected in the patent in suit for preparing glassy particles containing a perfume absorbed onto or adsorbed into a suitable carrier material in order to form glassy particles able to protect the perfume during storage and to deliver it during the wash as well as thereafter during drying or ironing;
- the patent as amended according to the first auxiliary request thus complied with the requirements of the EPC.

The set of claims according to said first auxiliary request consisted of 9 claims, claim 1 of which reading as follows:

"1. A laundry or cleaning composition comprising at least one nonsoap detergent active material and glassy particles comprising perfume, a perfume carrier material which supports the perfume by absorption on to the surface of the carrier material or by adsorption into pores of the carrier material, and a glass derived

from one or more at least partially water-soluble hydroxylic compounds selected from the group consisting of:

- (i) natural or synthetic gums; or
- (ii) chitin; or
- (iii) chitosan; or
- (iv) cellulose and derivatives thereof;

wherein at least one of said hydroxylic compounds has an anhydrous, nonplasticized, glass transition temperature, T_g , of 0°C or higher, and wherein said glassy particles have a hygroscopicity value of less than 80%."

Dependent claims 2 to 9 refer to particular embodiments of the claimed composition.

IV. An appeal was filed against this decision by the Opponent (Appellant).

In the statement of the grounds of appeal the Appellant referred additionally to the following documents

(6): WO-A-9428107, which was already cited in the discussion of the background art in the description of the patent in suit; and

(7): "Glass Transition Temperatures of Food Systems" by T. Labuza et al., January 1992.

The Respondent and Patent Proprietor filed under cover of the letter dated 26 November 2004 eight sets of claims as main request and first to seventh auxiliary request, respectively.

Oral proceedings were held before the Board on 8 November 2005.

V. The Appellant submitted in writing and orally *inter alia* that

- document (6) already addressed and solved the same technical problem underlying the invention of the patent in suit; in fact, according to this document, a material having a glass transition temperature, T_g , of 0°C or higher and thus which could form a glass, e.g. glucose, was used for preparing a protecting matrix for an additive consisting of a perfume adsorbed into a zeolite carrier; the resulting product was stable during storage and delivered the perfume during the wash and during the subsequent possible drying steps;
- therefore, even though document (6) did not disclose whether the particles used were glassy, it was obvious for the skilled person to try, alternatively to the materials used in the matrix of the products of document (6), other materials having a T_g of 0°C or higher and known to be suitable for encapsulating fragrances or perfumes, e.g. those disclosed in documents (1) to (5);
- furthermore, documents (4) and (5) already suggested the additional benefits achieved by using a glassy matrix for protecting detergent additives and the glassy materials selected in the patent in suit did not provide any additional unexpected technical advantage;

- it was thus obvious for the skilled person to protect a perfume adsorbed into a carrier or absorbed onto it by means of glassy particles of a material different from that used in document (6) but also having a Tg of 0°C or higher.

VI. The Respondent submitted in writing and orally *inter alia* that

- the claimed invention achieved a satisfactory control of the release of perfume during washing and drying by means of two independent retention and release mechanisms;
- one mechanism was due to the glass which contributed to the perfume retention during storage and to the release of whatever was within the glass during washing;
- the other mechanism was due to the absorption of the perfume onto a carrier or to its adsorption into the carrier pores which permitted its retention during storage, the retention of a substantial amount of perfume during the wash stages and its gradual release during and after drying;
- by means of these two mechanisms it was possible to achieve with low perfume levels a not excessive delivery of the perfume during the wash and the persistence of the perfume during and after drying;

- document (6) did not necessarily require the presence of a glass forming component; moreover, the process described in example I (page 12) involved the use of glycerol and of an excess of zeolite so that the resulting product was in the form of a free-flowing solid and not of glassy particles;
- furthermore, the cited prior art did not suggest the use of an encapsulating glass for solving the technical problem underlying the patent in suit;
- thus, the cited prior art did not suggest the combination of the above mentioned two different mechanisms for solving the technical problem underlying the claimed invention;
- the claimed subject-matter thus involved an inventive step.

VII. The Appellant requests that the decision under appeal be set aside and that the patent be revoked.

The Respondent requests that the appeal be dismissed and that the patent be maintained on the basis of any of the requests (main or first to seventh auxiliary request) filed with letter of 26 November 2004.

Reasons for the Decision

1. *Respondent's main request*

1.1 *Articles 123(2), 83 and 54 EPC*

The claims according to the main request correspond to the claims according to the first auxiliary request, filed at first instance under cover of the letter dated 27 January 2004 and found to comply with the requirements of the EPC in the decision under appeal (see point III above).

The Board is satisfied that these claims comply with the requirements of Article 123(2) EPC, that the claimed invention is sufficiently disclosed and that the claimed subject-matter is novel over the cited prior art, as found in points 14 to 16 of the decision under appeal.

Since the Appellant only argued against the inventiveness of the claimed subject-matter no further details are necessary.

1.2 *Inventive step*

- 1.2.1 The claimed invention and, in particular, the subject-matter of claim 1 relates to a laundry or cleaning composition comprising glassy particles derived from one or more of at least partially water-soluble hydroxylic compounds selected from the group consisting of natural or synthetic gums, chitin, chitosan and cellulose or derivatives thereof, wherein at least one of said hydroxylic compounds has an anhydrous, nonplasticized, glass transition temperature, T_g , of 0°C or higher, which glassy particles comprise perfume and a perfume carrier material which supports the perfume by absorption onto its surface or by adsorption

into its pores (paragraphs [0014] to [0017], [0023] and [0046]).

As explained in the description of the patent in suit, there had been a continuing search for methods and compositions which will effectively and efficiently protect the perfume contained in a detergent composition during storage and deliver it from a laundry bath onto fabric surfaces. For example, the adsorption of perfume onto a carrier material had been found to provide some improvement over the addition of neat perfume to a detergent composition. However, there was still a need for improvements in the length of storage time of laundry compositions without loss of perfume characteristics under conditions of high heat and humidity, in the intensity or amount of fragrance delivered to the fabrics and in the duration of perfume scent on the treated fabrics through the wash and after the wash during drying or ironing (see paragraphs [0003], [0005], [0012], [0214]).

- 1.2.2 The most suitable starting point to be selected for assessing inventive step of a claimed subject-matter is, according to the jurisprudence of the Boards of Appeal of the EPO, not a subject-matter (in the present case a composition) having the most possible number of features in common with the claimed one but, if possible, a technically realistic starting point contained in a document dealing with the same technical problem as the claimed invention and disclosing a subject-matter having a similar use and effect as the subject-matter claimed in the patent in suit (see Case Law of the Boards of Appeal of the EPO, 4th edition

2001, points 3.1 to 3.4 on pages 102 to 104, especially the second full paragraph on page 104).

Whilst the decision under appeal did not identify any one of documents (1) to (5) as being a preferable starting point for the evaluation of inventive step, the Appellant, having introduced document (6) with the statement of the grounds of appeal, argued in the oral proceedings that document (6), cited also in paragraph [0007] of the patent in suit, dealt with and solved the same technical problem addressed in the patent in suit and was thus to be considered as the most suitable starting point for the evaluation of inventive step.

The Board notes that document (1) relates to the improvement of the storage stability of detergent additives, such as perfumes, within a full detergent composition by means of a glassy coating which provides a rapid release of the additive into the detergent liquor; this document is, however, not concerned with the release of the perfume during and after laundering (see page 1, lines 1 to 11 and page 2, lines 25 to 30).

Document (2), relating to the encapsulation of volatile flavours useful in the preparation of foods (page 1, lines 1 to 5), and document (3), relating to tableted chewing gum containing flavorants entrapped in a delivery system (page 2, lines 3 to 6), do not relate to the same technical field as the patent in suit.

Document (4) relates to a spray-drying process for encapsulating fragrance oil which can be used in powdered detergents; such an improved spray-drying process reduces the oil loss during the preparation and

storage of the capsules; this document is also not concerned with the release of the perfume during and after laundering (column 2, line 55 to column 3, line 30; column 16, line 66 to column 17, line 2; column 17, lines 7 to 9 in combination with lines 28 to 29).

Document (5) relates to the protection of additive materials, such as perfume, in detergent compositions in order to improve their long-term storage (see page 1, lines 4 to 8; page 2, lines 5 to 12 and 25 to 31; page 3, line 4) and does not deal with the problem of the controlled delivery of the perfume to the fabric during laundering and after laundering.

Since the documents (1) to (5) either do not deal with the same technical problem dealt with in the patent in suit or belong to a different technical field, none of them qualifies in the Board's view as a suitable starting point for the evaluation of inventive step.

Document (6), instead, deals with the same technical problem dealt with in the patent in suit since it relates to a an effective perfume delivery system for use in laundry products which provides long-lasting, storage-stable, not overly-intensive fragrance to the product as well as fragrance to the laundered fabrics during and after the laundering, e.g. during drying or ironing (page 1, lines 19 to 23, page 3, lines 3 to 10, 15 to 18 and page 4, lines 4 to 11).

The Board takes thus document (6) as the most reasonable starting point for the evaluation of inventive step.

1.2.3 Document (6) discloses a perfume delivery composition in the form of particles comprising a porous carrier comprising a zeolite and a perfume releasably incorporated in the pores of said zeolite carrier and a matrix coated on said perfumed zeolite; such a matrix comprises a water-soluble composition in which the perfume is substantially insoluble and comprises 0 to 80% by weight of at least one solid polyol containing more than 3 hydroxyl moieties, such as glucose or sucrose, and from 20 to 100% by weight of a fluid diol or polyol, e.g. glycerol, in which the perfume is substantially insoluble and in which the solid polyol is substantially soluble (page 4, line 24 to page 5, line 4; page 5, lines 19 to 23; page 7, lines 13 to 20).

Since glucose, e.g., has an anhydrous, nonplasticized Tg of 31°C (see document (7), page 29), the solid polyol can thus be a material having an anhydrous, nonplasticized, glass transition temperature, Tg, of 0°C or higher; however, the solid polyol used in document (6) is not selected from the group consisting of partially water-soluble natural or synthetic gums, chitin, chitosan or cellulose and derivatives thereof, as required in the patent in suit.

It remains still to assess whether the product disclosed in document (6) comprises glassy particles, as required in the patent in suit, or not.

Glassy particles had already been disclosed and described in the prior art as comprising a hard, dense, amorphous, essentially noncrystalline solid encapsulant

(see document (2), page 7, lines 18 to 22; and document (4), column 3, lines 41 to 51).

The matrix of the products of document (6) may comprise very little or none of the solid polyol having a glass transition temperature as in the patent in suit but must comprise a fluid diol or polyol. Such a fluid diol or polyol has typically a melting point of below -10°C (see page 10, line 37 to page 11, line 2 of document (6)) and thus a very low Tg, glycerol having, e.g., a Tg of about -93°C (see page 29 of document (7)). Such a fluid diol or polyol, used in admixture with a solid polyol such as glucose, will thus necessarily lower the glass transition temperature of the whole matrix material. Therefore, document (6) does not implicitly disclose a perfume delivery system in the form of glassy particles.

On the contrary, the method of preparation of the products of document (6), described generally in claim 10 and applied specifically in example I on page 12, requires that the fluid polyol (glycerol) is mixed with the solid polyol (glucose) till a clear, liquid solution is formed; this solution is cooled at room temperature and 60 grams of the then obtained viscous liquid solution are mixed with 140 grams of the solid zeolite/perfume under agitation till a free-flowing powder agglomerate is formed.

Thus, the matrix material serves **to agglomerate** the excess of the solid zeolite/perfume particles, as taught on page 11, line 34 to page 12, line 3 of document (6).

This process of preparation cannot thus form a glassy system which has to be ground to the desired particle size as exemplified in the example of the patent in suit, according to which the sucrose syrup is mixed with only 20 to 30% by weight of the zeolite/perfume particles without agglomeration and the glassy mass obtained after cooling to below the glass transition temperature of the sucrose syrup is ground (see patent in suit paragraphs [0218] and [0219]).

The Board finds thus that glassy particles and agglomerated particles are structurally different and that the products disclosed in document (6) are particles obtained by agglomeration and therefore not glassy particles.

The products disclosed in document (6) thus differ from those of claim 1 of the patent in suit insofar, as the particles are not glassy and they do not contain an at least partially water-soluble hydroxylic compound selected from the group consisting of natural or synthetic gums, chitin, chitosan or cellulose and derivatives thereof.

- 1.2.4 Since the products of document (6) protect efficaciously the perfume during storage and gradually release the perfume from the zeolite during wash and after laundering (see page 3, line 28 to page 4, line 11; page 11, lines 12 to 23 and page 18, lines 22 to 24) and thus already solved the same technical problem dealt with in the patent in suit, the technical problem underlying the claimed invention, seen in the light of document (6), can only be formulated in simpler terms as the provision of an alternative

delivery system for protecting efficaciously perfume material contained in a detergent composition during storage and gradually releasing the perfume from the delivery system during wash and after laundering.

Even though the patent in suit does not contain any example referring to a product having a glassy material as claimed, but only examples relating to the use of sucrose or sucrose and maltodextrin as the glassy materials, the Board has no reason to doubt that similar results would be achieved by means of a product as claimed having a glassy material selected from natural or synthetic gums, chitin, chitosan or cellulose and derivatives thereof.

The Respondent also did not file any evidence that the selected products would not lead to similar results.

Therefore, the Board concludes that the technical problem underlying the claimed invention, as defined hereinabove, has been successfully solved by means of the selected perfume delivery system.

- 1.2.5 The questions to be answered in order to evaluate the inventiveness of the claimed subject-matter are thus whether the skilled person, in the light of the teaching of the prior art and of his common general knowledge, would have envisaged the use of glassy particles and then of the selected materials of claim 1 of the patent in suit as encapsulating agents, as alternative to the products used in document (6).

As specified above, document (6) teaches the compulsory use of a fluid diol or polyol and only the facultative use of glassy materials having a Tg of 0°C or higher and the preparation of the disclosed particles under conditions favouring agglomeration and not the formation of glassy particles. Therefore, the mechanisms involved in the protection of the perfume and its release from the products of document (6) (see page 11, line 12 to 23), though having an effect similar to that achieved in the patent in suit, cannot be considered, in the Board's view, to be identical to the effects that, in the light of the teaching of the prior art, the skilled person would have expected by using a glassy matrix.

In fact, in document (1) a glassy matrix of an inorganic material had been used only for protecting the additive during storage and delivering it rapidly into the wash liquor (page 2, lines 25 to 30).

Documents (2) and (3), though containing a technical teaching on the methods of preparation of glassy encapsulates (see document (2), page 1, lines 1 to 6 and document (3), page 4, lines 5 to 81), relate to a different technical field, that of food technology (see point 1.2.2 above) and cannot thus contain any suggestion whether a glassy encapsulate of the type used in the patent in suit could have an effect similar to that of the agglomerated products of document (6), i.e. if such glassy materials would be suitable for providing a gradual release of a perfume during the wash and after laundering.

Document (4) relates only to a spray-drying process for encapsulating fragrance oil within a glassy material thereby reducing the oil loss during the preparation and storage of the capsules; however, this document does not suggest whether such glassy materials would be suitable for providing a gradual release of the perfume during the wash and after laundering (see point 1.2.2 above).

Document (5) discloses glassy particles comprising a detergent adjunct (e.g. a perfume) prepared by forming a solution of a biopolymer, which can be one of the glassy materials used in the patent in suit, **dissolving the adjunct** in such a solution and drying the solution (page 2, lines 1 to 3; page 2, line 35 to page 3, line 4; page 13, lines 14 to 16 in combination with page 4, lines 17 to 21 and page 5, lines 10 to 14; page 27, lines 6 to 17; example 1). However, this document relates only to the protection of the adjuncts during storage (page 1, lines 10 to 19 and page 29, lines 24 to 29) and requires the formation of a solution of the adjunct with the biopolymer. Thus, the teaching of this document excludes, in the Board's view, the possible enrobing of perfume/zeolite particles as required in the patent in suit.

Thus the prior art, though certainly suggesting the use of the glassy materials used in the patent in suit as encapsulants for preparing glassy particles, does not suggest that this type of encapsulation with the specific materials selected in the patent in suit would be suitable, in combination with the use of a perfume absorbed onto a carrier or adsorbed into its pores, for providing a delivery system not only efficaciously

protecting the perfume material in a detergent composition during storage but also gradually releasing the perfume from the delivery system during the wash and after laundering.

Therefore, the skilled person would not have found any incentive in the prior art for replacing the materials used for the matrix of document (6) with a glassy encapsulant and for departing from the teaching of document (6).

The Board thus finds that it was not obvious for the skilled person, following the teaching of the prior art, to modify the teaching of document (6).

The Board therefore concludes that the claimed subject-matter involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Ammendola