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**Datasheet for the decision
of 5 May 2009**

Case Number: T 0977/06 - 3.3.06

Application Number: 98936360.1

Publication Number: 0993506

IPC: C11D 11/04

Language of the proceedings: EN

Title of invention:
Production of detergent granulates

Patentee:
Unilever PLC, et al

Opponent:
The Procter & Gamble Company

Headword:
Detergent Granulates/UNILEVER

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-



Case Number: T 0977/06 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 5 May 2009

Appellant: The Procter & Gamble Company
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
27 April 2006 concerning maintenance of
European patent No. 0993506 in amended form.

Composition of the Board:

Chairman: P.-P. Bracke
Members: G. Dischinger-Höppler
U. Tronser

Summary of Facts and Submissions

I. This appeal is from the interlocutory decision of the Opposition Division concerning maintenance of the European patent No. 0 993 506 in amended form on the basis of the then pending first auxiliary request, the only independent Claim 1 reading:

"1. A process for the production of a granular detergent product comprising bringing into contact a liquid binder and a powdered and/or granular solid neutralising agent, the liquid binder comprising an acidic component comprising an acid precursor of an anionic surfactant and an inorganic acid, wherein the amount of the inorganic acid is at least 15 wt% and no more than 50 wt% of the acidic component, the neutralising agent is present at a level at least sufficient to neutralise fully the acidic component and the neutralising agent and liquid binder are brought into contact and granulated in a gas fluidisation granulator."

II. A notice of opposition had been filed against the granted patent, wherein the Opponent sought revocation of the patent on the grounds of Article 100(a) EPC for lack of novelty and lack of inventive step (Articles 52(1), 54 and 56 EPC). The opposition was based, inter alia, on the following documents

D1 WO-A-9604359, and

D6 A. Naviglio et al., "Detergents Manufacture", in Soap/Cosmetics/Chemical Specialties, September 1987, pages 34, 36,37 and 54.

III. In its decision, the Opposition Division held that the subject-matter claimed in accordance with the first auxiliary request fulfilled the requirements of the EPC. The higher ranking main request was not allowed for the reason that the subject-matter claimed did not meet the requirements of Article 56 EPC.

IV. This decision was appealed by the Opponent, now Appellant.

V. Oral proceedings before the Board of Appeal were requested by the Appellant and scheduled for 5 May 2009.

Under cover of a letter dated 19 November 2008, the Appellant announced not to attend the hearing and withdrew its request for oral proceedings but maintained all other requests as well as all written submissions previously filed.

In its letter of reply dated 13 December 2006 to the Appellant's statement of Grounds of Appeal, the Respondent found it difficult to make a meaningful rebuttal of the Appellant's substantive discussion of document D1. Therefore, the Respondent requested an opportunity to comment on that issue if this was held to be significant (page 4, last but one paragraph).

Accordingly, oral proceedings were held as scheduled and in the announced absence of the Appellant.

VI. The Appellant submitted, amongst other arguments, that the claimed subject-matter was not inventive over document D1 as the closest prior art when combined with

the disclosure of document D6 since the latter already suggested that, in order to change the bulk density (BD) of a particulate detergent composition, an inorganic acid should be added to organic sulphonic acid before neutralisation in a fluidised bed. Hence, a skilled person concerned with the problem of document D1, namely reducing the BD, would necessarily do this and immediately find out that adding mineral acid reduces the BD.

VII. The Respondent, in writing and at the oral proceedings submitted in essence the following arguments:

As illustrated in the examples of the patent in suit, the technical problem solved by the claimed subject-matter in view of document D1 consisted in the provision of an alternative process which even resulted in a further reduced BD.

The teaching of document D6 was ambiguous in relation to the effects actually provided by the evolution of carbon dioxide during neutralisation or by changing the ratio of sulphonic acid and inorganic or organic acid. However, it was apparent from Example 19 of document D1 that varying the ratio did not necessarily change the BD of the detergent granulate. Further, according to document D6 the BD was controlled via the degree of agglomeration achieved in equipment different to the gas fluidisation granulator used in accordance with Claim 1.

Therefore, the information given in document D6 was not sufficient for a skilled person to suppose that adding inorganic acid in an amount of 15 to 50 wt% of the

acidic component would decrease the BD of the detergent compositions disclosed in document D1.

VIII. The Appellant requested in writing that the decision under appeal be set aside and the patent be revoked.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

Inventive step

1. The patent in suit relates to a process for the production of detergent compositions having a reduced BD (page 2, paragraph [0001]).

It is stated in the description of the patent in suit, that there is a particular need for producing lower BD powders even if low shear granulation can already give good control of the BD (page 2, paragraph [0007]).

Document D1 is mentioned in the patent in suit as a relevant prior art document also relating to the production of low BD powders and disclosing for this purpose a process where a neutralising agent such as an alkaline detergency builder and a liquid acid precursor of an anionic surfactant are contacted in a fluidisation zone to form low BD detergent granules (see patent page 2, paragraph [0010]).

The Board agrees, therefore, with the parties that D1 is a suitable starting point for the assessment of inventive step.

2. As confirmed by the Respondent, document D1 discloses a process like the claimed one with the exception that no inorganic acid is mentioned (see claims).

There exists no direct comparison of the claimed process with that disclosed in document D1, but it can be derived from the examples of the patent in suit, in particular from test 2 and 4, that no effect is obtained if the amount of sulphuric acid is well below the lower limit of the claimed range. It is, however, observed that no particular effect is apparent for the upper limit of the range, namely that the amount of sulphuric acid shall not be more than 50 wt% of the acidic component.

The Board accepts therefore and in the Respondent's favour as being credible that the addition of at least 15 wt% of inorganic acid decreases the BD of the detergent product.

Hence, the technical problem credibly solved by the claimed subject-matter in view of the disclosure of document D1 can be defined to consist in the provision of a process for the production of a granular detergent product having a still lower BD.

3. It remains to be decided whether, in view of the available prior art documents, it was obvious for the skilled person to solve this technical problem by the means claimed, namely by the addition of an inorganic acid in an amount of 15 to 50 wt% based on the acidic component.

4. As already stated above, the addition or presence of inorganic acid during the process is not mentioned in document D1, let alone any effect provided by that feature.

However, document D6 discloses that using mixtures of sulphonic acids and inorganic acids or organic acids for manufacturing detergents has an impact on the density of the product (page 37). It is noted that the only inorganic acid specified in document D6 is sulphuric acid (Figure 1) and the only organic acid mentioned is an unspecified fatty acid (Figure 2).

Document D6 is an article comparing traditional methods for producing detergents with a new technology developed by Tekna Patents using a special turbo reactor in combination with a rotating agglomerator. The new technology is concerned with the technical problem of controlling the growth, the appearance and the BD of the granules (page 34, middle column, second paragraph). The traditional methods are dry blending, spray drying, spray mixing and instant agglomeration. Amongst other disadvantages, it is said that dry blending, spray mixing and instant agglomeration provide too high BDs (page, 34, right-hand column, second paragraph, page 36, left-hand column, third paragraph and fourth paragraphs). Only the spray drying method is said to give the desired low BD. However, this method requires high temperatures and suffers from the corresponding disadvantages (page 34, last paragraph to page 36, first paragraph).

5. It may be true - as argued by the Respondent - that the Tekna technology disclosed in document D6 provides

flexibility to the process (page 36, middle column, third paragraph) and produces light granules even if no neutralisation takes place (page 36, right-hand column, paragraphs 3 and 4).

However, document D6 also discloses particular benefits which are obtainable only in a case of neutralisation and independent from the flexibility of the process. These benefits are due to the heat of reaction produced during neutralisation and, in particular, to the evolution of carbon dioxide (CO₂) which causes the granules to swell, so that they become of lighter weight (page 37, left-hand column, paragraphs 6 and 7).

6. In the Respondent's opinion, the term "lighter weight" was not sufficiently clear. It could relate to particles which have been broken during the process. Hence, there was no teaching in document D6 that the evolution of carbon dioxide would reduce the BD.

The Board is not convinced by that argument since the above explanation in document D6, namely that the particles swell, so that they become of lighter weight, circumscribes in other words that a reduction of the specific weight of the particles takes place. This is confirmed in the same document on page 37, left-hand column, paragraph 8, where it is stated that the weight of the granules decreases as the evolution of CO₂ increases, so that a change of the amounts and ratios of the sulphonic acids and of the (in)organic acids changes the size and the specific weight of the granules.

Further, document D6 deals generally with the objective of controlling the BD (point 4 above) which is defined as the ratio of weight to volume of a particulate material and it is disclosed that a BD as low as 0.35 to 0.45 kg/l is achievable with the above neutralisation of acid mixtures (paragraph bridging pages 37 and 54 in combination with Figure 1). A possible disintegration of the granules in the process is neither considered in document D6 nor desired since the document as a whole is concerned with the production of low BD detergents (see also point 4 above).

Therefore, the Board is of the opinion that a skilled person would infer from document D6, independent from the specific turbo reactor disclosed therein, the teaching that the more CO₂ is evolved during the neutralisation, the larger and lighter are the particles produced and the lower is the BD of the particulate product.

7. The Respondent drew attention to Example 19 of document D1 to show that varying the ratio of sulphonic acid and (in)organic acid as recommended in document D6 would not necessarily result in a reduced BD.

As correctly observed by the Respondent, the BD remains the same in Examples 16 and 19 of document D1, in spite of the fact that in Example 19 about 24 % of the LAS (linear alkyl sulphonate) present in Example 16 are replaced by soap, i.e. the salt of a fatty acid.

The Board observes that document D1 does not make clear whether the replacement in Example 19 of a part of the

linear alkyl sulphonic acid present in Example 16 by the organic acid brings about a perceptible increase in the evolution of CO₂ during neutralisation since the organic acid is not defined and might have a comparable molecular weight as the sulphonic acid.

It is, however, evident for those skilled in the art that a change of the weight ratio of sulphonic acid and organic acid or inorganic acid produces more CO₂ upon neutralisation only if the molecular weight of the latter is small in comparison to that of the former.

8. The Board concludes, therefore, that a skilled person seeking to reduce the BD of the detergent granulate obtained in accordance with the process disclosed in document D1 would have considered the recommendation in document D6 to vary the ratio of sulphonic acid and (in)organic acid so that the evolution of CO₂ during neutralisation is sufficiently increased to swell the particles and reduce the BD. He would try the sulphuric acid exemplified in Figure 1 and find corresponding ratios within which the effect is most beneficial.

The skilled person would thus arrive in an obvious manner at the claimed subject-matter.

9. For these reasons, the Board finds that the subject-matter of Claim 1 is not based on an inventive step and does not comply with the requirements of Articles 52(1) and 56 EPC.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The patent is revoked.

The Registrar:

The Chairman:

G. Rauh

P.-P. Bracke