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**Datasheet for the decision  
of 19 October 2011**

**Case Number:** T 1789/09 - 3.3.06

**Application Number:** 96909881.3

**Publication Number:** 870008

**IPC:** C11D 11/00, C11D 17/06,  
C11D 3/12

**Language of the proceedings:** EN

**Title of invention:**  
Process for producing granular detergent components or  
compositions

**Patent Proprietor:**  
THE PROCTER & GAMBLE COMPANY

**Opponent:**  
Henkel AG & Co. KGaA

**Headword:**  
Granular detergent composition/PROCTER

**Relevant legal provisions:**  
EPC Art. 69

**Relevant legal provisions (EPC 1973):**  
EPC Art. 54(1)(2), 56

**Keyword:**  
"Novelty: main and first auxiliary request - no"  
"Second auxiliary request - yes"  
"Inventive step: second auxiliary request - yes"

**Decisions cited:**  
G 0002/88

**Catchword:**

-



Case Number: T 1789/09 - 3.3.06

**DECISION**  
of the Technical Board of Appeal 3.3.06  
of 19 October 2011

**Appellant:**  
(Opponent)

Henkel AG & Co. KGaA  
Patente (VTP)  
D-40191 Düsseldorf (DE)

**Respondent:**  
(Patent Proprietor)

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**Representative:**

Howard, Phillip Jan  
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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted 17 July 2009  
rejecting the opposition filed against European  
patent No. 870008 pursuant to Article 101(2)  
EPC.**

**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 decision of the Opposition Division to reject the opposition and to maintain European patent No. 0 870 008 on the basis of 9 claims as granted, the independent Claim 1 reading:

"1. A process for the preparation of a granular detergent composition or component having a bulk density greater than 650 g/l, which comprises the step of dispersing a liquid binder throughout a powder stream in a high speed mixer to form granular agglomerates,  
**characterised in that** the powder stream comprises crystalline zeolite A having an oil absorbing capacity of at least 40ml/100g."

Dependent Claims 2 to 9 relate to preferred embodiments of the process of Claim 1.

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 inventive step (Article 54 and 56 EPC). The opposition was based, amongst others, on the following documents

D1 DIN ISO 787, Teil 5, Allgemeine Prüfverfahren für Pigmente und Füllstoffe, Bestimmung der Ölzahl, Februar 1983

D2 EP-A-0 521 635 and

D8 WO-A-93/25378.

III. In its decision, the Opposition Division found that the subject-matter of Claim 1 as granted was not anticipated, *inter alia*, by the prior art disclosed in documents D2 and D8 and inventive in view of the cited prior art.

IV. This decision was appealed by the Opponent (hereinafter Appellant) who filed - under cover of a letter dated 22 June 2010 - document

D12 Wolfgang Pietsch, Size enlargement by agglomeration, Wiley 1991, pages 112 to 115 and 138 to 141,

D13 Wolfgang Pietsch, Agglomeration Processes, Wiley 2002, pages 144 to 150 and

D14 Gerald Heinze, Handbuch der Agglomerationstechnik, Wiley 2000, pages 97 to 98

in support for the general technical knowledge.

V. The Proprietor (hereinafter Respondent) filed with letter dated 2 September 2011 amended claims in five auxiliary requests.

Claim 1 of the first auxiliary request differs from that of the main request by replacing the term "40ml/100g" by "45ml/100g".

Claim 1 of the second auxiliary request differs from that of the main request by the addition of the following features:

- the liquid binder is a paste which comprises at least 10% by weight of a neutralised anionic surfactant, the paste having a viscosity of at least 10 000 mPas, and
- the granular detergent composition or component comprises:
  - a) from 20% to 70% by weight of crystalline zeolite A having an oil absorbing capacity of at least 40 ml/100g;
  - b) at least 30% by weight of anionic surfactant; the ratio of the crystalline zeolite A to the anionic surfactant being less than 1:1.

VII. Upon requests made by the parties, oral proceedings before the Board of Appeal were held on 19 October 2011.

VIII. The Appellant, orally and in writing, submitted in essence the following arguments:

- The invention was not sufficiently disclosed if the parameter of the oil absorbing capacity mentioned in Claim 1 should not denote the initial capacity of the zeolite, i.e. before any of the process steps is carried out, but the capacity only at the moment when the zeolite is present in the powder stream, even after any possible agglomeration with other ingredients since it was not feasible to measure the oil absorbing capacity of the zeolite in such agglomerates.

- The subject-matter claimed in the main and first auxiliary requests was not novel, inter alia, over the disclosure of document D2 due to the high uncertainty of measurement of the oil absorbing capacity and over document D8, which disclosed using a zeolite A

according to the "Krummel document" as did the patent in suit.

- When assessing inventive step of the subject-matter of Claim 1 of the second auxiliary request, the Appellant started from Example 1 of document D8 and argued that the only difference consisted in that the ratio zeolite : anionic surfactant was lower in the claimed process. However, this difference did not involve an inventive step since the mixing of zeolite with more anionic surfactant than in the prior art was an option applied by a skilled person in accordance with circumstances.

IX. The Respondent rejected the Appellant's arguments and made in essence the following submissions:

- The claimed subject-matter was novel since an essential feature of the invention consisted in that the specified oil absorbing value was that of zeolite A within the powder stream present in the high speed mixer. This was set out in the description of the patent in suit. In the process of document D2, the oil absorbing capacity was that of the raw zeolite and, therefore, not comparable with that of the patent. Document D8, while referring to the Krummel document, did not disclose that the zeolite used in the examples was actually made according to that document or had the required oil absorbing capacity.

- The subject-matter of Claim 1 of the second auxiliary request was inventive in view of document D8 since it allowed the production of a granular detergent composition containing considerably higher amounts of anionic surfactant and since there was no hint in the

prior art that this could be achieved by using zeolite A having the specified oil absorbing capacity. In this respect, the late filed document D12 was irrelevant while documents D13 and D14 were not prior art.

- X. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed or that the patent be maintained on the basis of one of the auxiliary requests 1 to 5 submitted with the letter dated 2 September 2011.

## **Reasons for the Decision**

1. *Interpretation and sufficiency of disclosure (all requests)*
  - 1.1 The objections made by the Appellant with respect to sufficiency of disclosure are based on the Respondent's interpretation of the parameter "oil absorbing capacity" used in Claim 1 of all requests (point IX above).
    - 1.1.1 According to the Appellant this term referred to the initial oil absorbing capacity of the zeolite before any process step was carried out. Otherwise, there would be a lack of sufficiency of disclosure since Claim 1 covered the possibility of forming powdery agglomerates of the zeolite with other components before the powder stream is introduced into the high speed mixer. The other components might change the oil absorbing capacity of the zeolite. However, it was



impossible for any skilled person to measure the oil absorbing capacity of the zeolite within such agglomerates.

- 1.1.2 In the Respondent's opinion this interpretation was against the gist of the invention as set out in the patent. It was apparent from the description that the invention did not cover embodiments where the oil absorbing capacity of the zeolite would be lost by combining the zeolite with other components prior to introducing the zeolite containing material into the powder stream.

The Respondent pointed to the first sentence of paragraph 17 of the patent in suit where the following is stated:

"It is an essential feature of the present invention that the Zeolite A used in the formation of the granular agglomerates has an oil absorption capacity of at least 40ml/100g",

and argued that following the second sentence of Article 69(1) EPC, according to which the description had to be used for interpretation, Claim 1 had to be construed such that the zeolite had the oil absorbing capacity of at least 40 ml/100g at the moment where the liquid binder is dispersed within the high speed mixer throughout the powder stream.

- 1.1.3 Article 69(1) EPC relates to the extent of protection conferred by a European patent or patent application. According to the Protocol on the Interpretation of Article 69 EPC which was adopted as an integral part of

the EPC to provide a mechanism for harmonisation of the various national approaches to the interpretation and determination of the protection conferred by a patent, this should be done so as not to overestimate either the literal wording of the claims or the general inventive concept disclosed in the description (see also G 2/88, OJ EPO 1990, 93, reasons No. 2.1, 3.3 and 4.).

The Board notes, however, that this does not mean that the scope of protection conferred by a claim is generally limited by the description.

However, the sentence cited from paragraph 17 of the patent does not even say that the zeolite exhibits the oil absorbing capacity only **during** the formation of the granular agglomerates in the high speed mixer. In the Board's opinion, the term "in the formation of" certainly covers the process of forming granular agglomerates as such, as it is expressed in Claim 1.

Moreover, since the process of Claim 1 merely "comprises" the step of dispersing a liquid binder throughout the zeolite containing powder stream in the high speed mixer, further process steps like formation of the powder stream by agglomeration with other ingredients are not excluded.

The Respondent has agreed that it would not be possible for a skilled person to measure the oil absorbing capacity of the zeolite within such agglomerates.

Hence, in the Board's opinion, defining a process by a parameter which clearly cannot be measured does not make technical sense to the skilled artisan.

- 1.1.4 The Board concludes therefore, that anyone skilled in the art would understand the oil absorbing capacity mentioned in the claims as that of the zeolite as initially applied, i.e. before any process step is carried out in the course of which the initial capacity is changed. No other meaning can be attributed to the term in question.

As a corollary to this conclusion, consideration of the Appellant's objection under Article 83 EPC is redundant.

- 1.2 Another disagreement concerns the parties' interpretation of the value of the oil absorbing capacity.

According to the patent in suit (paragraph 44), the oil absorption values can be determined by following British Standard Part 7: 1982 which corresponds to ISO 787/5-1980, i.e. document D1.

- 1.2.1 The Appellant argued that this standard included an inaccuracy of measurement of  $\pm 50\%$ .
- 1.2.2 According to the Respondent, however, the error was much smaller since document D1 only mentioned a difference of at most 50% between the absolute measured values. Further, this error did not even apply to zeolites since document D1 concerned pigments and extenders.

- 1.2.3 In the Board's opinion there is no reason to assume that the error is smaller with zeolites, since the patent recommends the standard of document D1 for determining the oil absorbing capacity and does not mention a particular accuracy especially if zeolites are used.

Concerning the extent of the error, it appears that the Respondent's understanding is the correct one (see document D1, page 1, second paragraph). However, even in this case, the error is still as high as  $\pm 33.33\%$  ( $\pm 1/3$ ).

Due to this uncertainty of measurement, the Board considers the values mentioned in the claims not as selective points but as ranges of possible values. Accordingly, the value of the oil absorbing capacity mentioned in Claim 1 of the main request covers the range of 40 ml/100g  $\pm 33.33\%$ , hence values from about 26.7 to 53.3 ml/100g.

2. *Novelty (main request and first auxiliary request)*

- 2.1 Lack of novelty of the claimed subject-matter has been objected to, inter alia, in view of Example H of document D2.
- 2.2 This example discloses a process wherein the spray-dried powder of Example G is granulated with liquid nonionic surfactant as binder in a Fukae high speed mixer to form a granular detergent agglomerate having a bulk density greater than 650 g/l (pages 8 to 10). The powder stream of Example G comprises zeolite A, specifically Wessalith P ex Degussa (page 6, line 32).

The oil absorbing capacity of Wessalith P as measured according to document D1 is given as 36 g/100g (page 7, line 13) which translates into 39 ml/100g (document D1, page 4, point 8) and with the inaccuracy of measurement of document D1 into the range of 26 to 52 ml/100g.

2.3 The Respondent argued that the inaccuracy of measurement in document D2 was not comparable with that of the patent in suit since it was based on a sample of 100g instead of 5g as in document D1 and the patent.

2.4 However, the Board adopts in this respect the Appellant's view that the accuracy of measurement rather increases with increasing sample size.

2.5 Thus, there exists a large overlap between the oil absorbing capacity of 26.8 to 53.2 ml/100g of the zeolite A used in the process of Claim 1 of the main request and that of the Wessalith P of 26.13 to 51.87 ml/100g used in Example H of document D2.

Since there is no hint in document D2 not to work within the overlapping area, hence with zeolite A having an oil absorbing capacity of 26.8 to 51.87 ml/100g, the Board concludes that document D2 anticipates the process of Claim 1 of the main request.

2.6 The same reasons apply mutatis mutandis to Claim 1 of the first auxiliary request which differs from that of the main request only in that the oil absorbing capacity of zeolite A is now at least 45 ml/100g. As this value covers the range from 30 to 60 ml/100g, it still overlaps to a large extent with that of the Wessalith P used in document D2 (point 2.2 above).

2.9 For all these reasons, the Board concludes that the subject-matter of Claim 1 of the main request and the first auxiliary request is not novel in view of Example H of D2 (Article 54 EPC).

3. *Second auxiliary request*

3.1 The subject-matter of Claim 1 differs from that of the main request in that it has been limited insofar as

1) the liquid binder used in the process is defined as a paste having a viscosity of at least 10 000 mPas which comprises at least 10% by weight of a neutralised anionic surfactant,

and

2) the granular detergent composition or component produced is restricted to one comprising

a) from 20% to 70% by weight of crystalline zeolite A having an oil absorbing capacity of at least 40 ml/100g and

b) at least 30 % by weight of anionic surfactant; such that the ratio of the crystalline zeolite A to the anionic surfactant is less than 1:1.

3.2 The Board is satisfied that the amendments made to the claims of the second auxiliary request are admissible under Article 84 EPC since they do not introduce clarity problems. They are also admissible under Article 123(2) and (3) EPC since they are based on the claims as filed, respectively as granted, and limit their scope. Further, the claimed subject-matter is

novel since none of the cited prior art documents discloses the claimed combination of features.

The Appellant did not object with respect to these requirements of the EPC.

### 3.3 *Inventive Step*

3.3.1 The patent relates to a process for the continuous preparation of a granular detergent composition having high bulk density and good flow properties. In such compositions zeolite A is used as a builder since it is particularly suited to removing cations such as calcium and magnesium from hard water (paragraph 1).

It is explained in the description of the patent that one of the factors which limit the surfactant activity of such compositions is the capacity of zeolite A to absorb liquid organic materials. However, replacing or modifying the zeolite A might affect other builder characteristics of the zeolite (paragraphs 3).

Hence, the technical problem to be solved as set out in the patent in suit can be seen in the provision of a granulation process by which a large amount of surfactant may be incorporated into agglomerates without losing any of the builder capabilities and which results in products having reduced amounts of oversize particles (paragraphs 3, 4 and 6).

3.3.2 The Board agrees with the parties that document D8 is a suitable starting point for the assessment of inventive step since it is concerned with the same object of providing high bulk density granular detergent

compositions having a higher content of detergent active ingredients and a narrow particle size distribution (page 1, first paragraph and page 4, first full paragraph).

Document D8 discloses a process for continuously preparing a granular detergent composition having a bulk density of greater than 650 g/l which comprises the steps of dispersing a detergent active paste comprising at least 10% by weight of a neutralised anionic surfactant throughout a powder stream in a high speed mixer and forming an agglomerate (Claim 1 and pages 4 and 5, Summary of the Invention). The viscosity of the paste ranges from 5 000 to 10 000 000 mPas, preferably from 30 000 to 70 000 mPas (page 7, first paragraph). Amorphous or crystalline aluminosilicate, preferably zeolite A, may be used as a builder material comprised in the powder stream, (paragraph bridging pages 15 and 16, and page 18, first paragraph).

This process is illustrated in Example 1 of document D8, where a paste having a viscosity of 25 000 mPas and containing 80% of anionic surfactant is fed at a rate of 2.8 tons/hour to a high speed mixer. Simultaneously, a powder stream containing 60% zeolite A, is fed into the mixer at a rate of 4 tons/hour. The process results in final agglomerate comprising zeolite A in an amount within the range of 20 to 70% by weight and at least 30% by weight of anionic surfactant and having not more than 10% of oversized granules which are defined as coarser than 1180  $\mu\text{m}$  (page 28, last but one paragraph).

3.3.3 This example is the basis of the Appellant's objections who argued that the zeolite A used in the example was



the same as in the patent in suit since both, document D8 and the patent referred to the "Krummel document" with respect to the preparation of the zeolites. The only feature distinguishing the product of Example 1 from that achieved with the claimed process consisted in that the ratio of zeolite : anionic surfactant was more than 1 : 1, which means that the detergent product obtained in Example 1 of document D8 contained less anionic detergent than the product according to Claim 1.

However, using higher amounts of anionic surfactant was covered by the disclosure of document D8 and merely an option which was obvious for those skilled in the art and not inventive.

Apart from that, it was known from documents D12 to D14 that proper granulation of a product depends on the amount of liquid used. Therefore, it was obvious for the skilled person to use a builder having a higher oil absorbing capacity in order to increase the amounts of surfactant in the produced detergent granules.

- 3.3.4 According to the Respondent, document D8 did not directly and unambiguously disclose that the zeolite A used in Example 1 was made according to the "Krummel document". Therefore, the claimed process differed from the process disclosed in document D8 not only in the smaller ratio of zeolite : anionic surfactant but also in the requirement that the oil absorbing capacity of the zeolite has to be at least 40 ml/100g.

Bearing in mind that the object of document D8 consisted in increasing the amount of surfactant in the product, it was evident that the authors of this

document did not readily expect a possible further increase of the ratio of the anionic surfactant in the product.

Document D12 was irrelevant since it did not suggest using a zeolite having a higher oil absorption capacity in order to produce useful detergent products containing higher amounts of surfactant. Documents D13 and D14 were not more relevant and not even prior art.

- 3.3.5 The Board notes that document D8 and the patent, both contain almost the same reference concerning the "Krummel document". In paragraph 16 of the patent it reads:

"The aluminosilicates useful in this invention are crystalline in structure and can be naturally occurring aluminosilicates or synthetically derived. A method for producing aluminosilicate ion exchange materials is discussed in U. S. Pat. No. 3,985,669, Krummel et al., issued Oct. 12, 1976, incorporated herein by reference."

The statement in document D8 differs there from only in that the aluminosilicates useful in that invention may be crystalline **or amorphous** in structure (page 15, last paragraph to page 16, line 1).

However, bearing in mind that the "Krummel document" discloses various processes for the production of different aluminosilicates and since document D8 is not limited to zeolite A as the only aluminosilicate builder (page 14, line 3 to page 16, first paragraph), it is apparent that said statement in document D8 does

not directly and unambiguously mean that the zeolite A used in the examples actually has been so produced.

Hence, apart from the smaller ratio of the crystalline zeolite A to the anionic surfactant, the oil absorption capacity of the zeolite A of at least 40ml/100g has to be considered as a second feature distinguishing the claimed process from that illustrated in Example 1 of document.

- 3.3.6 The Respondent has not provided evidence concerning the amount of oversized particles produced by the claimed process when compared with that given in Example 1 of document D8 (point 3.3.2).

Therefore, the technical problem credibly solved by the claimed subject-matter in view of Example 1 of document D8 must be seen to consist in the provision of a process for the preparation of a granular detergent composition comprising higher amounts of anionic surfactant at no undue formation of oversized particles.

- 3.3.7 It remains to be decided whether, in view of the available prior art documents, it was obvious for someone skilled in the art to solve the above stated technical problem by the means claimed, namely by using zeolite A having an oil absorbing capacity of at least 40 ml/g.

- 3.3.8 The Board has not overlooked that there are ratios of builder to surfactant of less than 1:1 mentioned in the paragraph bridging pages 13 and 14 of document D8. However, no account is taken thereof the amount of oversized particles which may be so produced and ratios

higher than 1 : 1, e.g. 1 : 0.2 or 1 : 0.5 are clearly preferred. Further, this paragraph does not specifically refer to zeolite A or anionic surfactant but includes all possible builders and surfactants mentioned in the document. Therefore, document D8 fails to disclose the high proportion of anionic surfactant obtained in the claimed process.

As a consequence of this failure of disclosure, it is in the Board's opinion not possible to consider the using of higher amounts of anionic surfactant in Example 1 of document D8 to be merely an obvious option, since it was the aim of document D8 to produce detergent granules containing higher amounts of surfactant, and since the only surfactants used in Example 1 are anionic.

Hence, the skilled authors of document D8 did not realise that still useful products can be obtained with higher proportions of anionic surfactants in the detergent granules if only the oil absorbing capacity of the zeolite A was at least 40 ml/g. This fact alone is in contradiction to the Appellant's allegation that it would be obvious for a skilled person that a higher oil absorbing capacity of the builder would allow the incorporation of higher amounts of anionic surfactant into the product.

Document D12 cited by the Appellant in support of this allegation discusses the effect of the free moisture content on the agglomeration and the relationship between the moisture and the agglomerate porosity (page 113, first full paragraph). The Appellant further refers to a statement saying that more binder or liquid

yield larger agglomerates (document D12, page 141, lines 5 to 11).

However, in the Board's opinion, these references do not suggest that a high oil absorption capacity as measured for example according to document D1 using linseed oil as reagent (see page 3, paragraph 4) would allow larger amounts of surfactant to be taken up without undue formation of oversized particles.

In particular, the Board is convinced by the Respondent's arguments that the porosity of the agglomerate is not comparable with the oil absorbing capacity of the zeolite particles from which the agglomerates are formed. Further, the discussion in document D12 of disintegration tools for reducing the size of the agglomerates rather suggests that anyway oversized particles are normally formed (page 141, lines 12 to 19).

Documents D13 and D14 have been published in 2000 and 2002. Therefore, these documents are not prior art. Due to the long period between the priority date of the patent in suit and those publication dates, the Board does not consider that the content of those documents actually constitutes the general technical knowledge at the priority date of the patent. Hence, no account is taken here of the contents of documents D13 and 14.

None of the other documents on file contains any information concerning a relationship between the oil absorbing capacity of an aluminosilicate builder and the amount of surfactant incorporated therein.

3.3.9 Hence, the Board concludes that a skilled person was not guided by the cited prior art to use in Example 1 of document D8 zeolite A having an oil absorbing capacity of at least 40 ml/100g in the expectation of an increase of the proportion of anionic surfactant in the granules without undue formation of oversized particles.

Therefore, the process claimed in the second auxiliary request is deemed to be based on an inventive step, thus complying with the requirements of Articles 52(1) and 56 EPC.

3.3.10 As a consequence, there is no need to consider the remaining third to fifth auxiliary requests.

## **Order**

### **For these reasons it is decided that:**

The decision under appeal is set aside.

The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the second auxiliary request submitted with the letter dated 2 September 2011.

The Registrar:

The Chairman:

D. Magliano

P.-P. Bracke