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D E C I S I O N
of 28 February 1996

Case Number: T 0639/92 - 3.3.1

Application Number: 84305681.3

Publication Number: 0137669

IPC: C11D 3/00

Language of the proceedings: EN

Title of invention:
Detergent compositions

Patentee:
THE PROCTER & GAMBLE COMPANY, et al

Opponent:
Unilever PLC / Unilever N.V.
Henkel Kommanditgesellschaft auf Aktien

Headword:
Detergent Composition/PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 123(2), 84, 83

Keyword:
"Deletion from the description (admissible)"
"Support by the description (questionable)"
"Sufficiency of disclosure (no, undue burden)"

Decisions cited:
T 0226/85, T 0409/91, T 0435/91

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0639/92 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 28 February 1996

Appellant: (Proprietor of the patent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 8 May 1992 revoking European patent No. 0 137 669 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: A. J. Nuss
Members: R. K. Spangenberg
W. Moser

Summary of Facts and Submissions

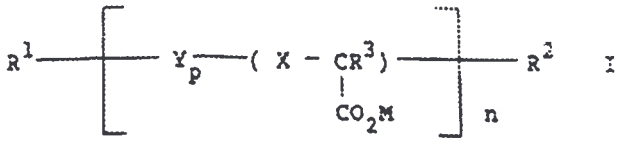
I. European Patent 0 137 669 was granted in response to European patent application No. 84 305 681.3. The patent specification contained eleven claims.

II. Considering two notices of Opposition by Respondents I (Opponents I) and Respondent II (Opponent II), both being filed on the grounds set out under Article 100(a) EPC, the Opposition Division revoked the patent by a decision announced orally on 24 March 1992 and delivered in writing on 8 May 1992. This decision was based on an amended set of seven claims (Set C, submitted on 24 March 1992) and a description adapted thereto.
Claim 1 concerned a detergent composition comprising

(a) an organic surfactant,
(b) a detergency builder comprising
  (i) a polycarboxylate polymer and
  (ii) a water insoluble aluminosilicate ion-exchange material, and
(c) a bleach system comprising an inorganic or organic peroxy bleaching agent, an organic peroxy acid bleach precursor, and a heavy metal scavenging agent.

The polycarboxylate polymer (component b(i) above) was defined as a

"polymer having a magnesium building capacity of at least 3.0 moles/kg at 25° C and being selected from compounds having the empirical formula I



wherein X is CH_2, Y is a comonomer or comonomer mixture, R^1 and R^2 are bleach and alkali-stable polymer-end groups, R^3 is H or C_{1-4} alkyl, M is H, alkali metal, alkaline earth metal, ammonium or substituted ammonium, p is from 0 to 2, and n is at least 10, and mixtures thereof, and wherein the polycarboxylate polymer comprises copolymeric polycarboxylate of formula I in which Y is a maleic acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400, and wherein n is defined as the weight average molecular weight of the polycarboxylate polymer divided by the mole average monomer molecular weight of the polycarboxylate polymer" (underlining added by the Board).

The Opposition Division considered that the above Claim 1 contained two different definitions of "n", the underlined one having been introduced during the opposition proceedings. It held that, for this reason, the amended Claim 1 lacked clarity. In addition, the Opposition Division stated that, since this underlined definition of "n" was used to determine the values of "n" in the description and the examples, the skilled person was prevented from making a composition according to the invention, as "n" could not be determined with certainty. The Opposition Division thus further held that the disclosure of the invention was insufficient with respect to Article 83 EPC.

III. An appeal was lodged against this decision by the Appellant (Proprietor of the patent in suit). Together with the statement of grounds of appeal, the Appellant

filed an amended text of the patent in suit, containing further amendments to Claim 1 and page 4 of the description. He submitted that in the amended Claim 1, as well as in the amended description, there was only one single definition of "n" mentioned now and that, therefore, the objections raised in the decision under appeal had been removed.

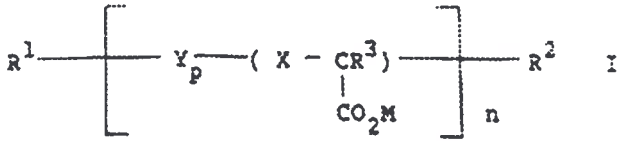
IV. In response, Respondent II questioned the novelty of the claimed compositions. Furthermore, Respondents I and II submitted that the compositions claimed in the patent in suit lacked an inventive step.

V. In a communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, the Board raised some further points which, in the Board's judgment, should be discussed during these proceedings, i.e. the compliance of the patent in suit with Articles 83, 84 and 123(2) EPC. In particular, the Board mentioned the fact that component (b)(i) was defined by its "magnesium building capacity of at least 3.0 moles/kg at 25°C", and observed that the significance of this definition for the above issues had already been in dispute during the opposition proceedings.

VI. During the oral proceedings, which took place on 28 February 1996, the Appellant submitted a further amended text of the patent in suit, containing seven claims and a description adapted thereto, and requested, as **main request**, that the decision under appeal be set aside and the patent in suit maintained on the basis of this amended text. By way of an **auxiliary request**, he requested that the patent in suit be maintained on the basis of a further amended set of five claims.

Claim 1 of the **main request** differed from the one underlying the decision under appeal only in the definition of component b(i), which was now defined as a

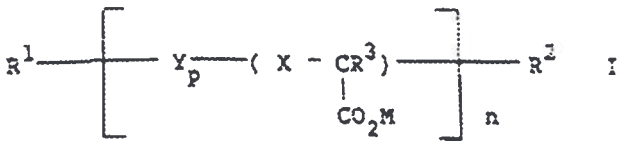
"polymer having a magnesium building capacity of at least 3.0 moles/kg at both 25°C and 90°C and being selected from compounds having the empirical formula I



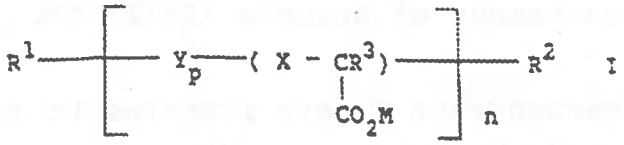
wherein X is CH_2, Y is a comonomer or comonomer mixture, R^1 and R^2 are bleach and alkali-stable polymer-end groups, R^3 is H or C_{1-4} alkyl, M is H, alkali metal, alkaline earth metal, ammonium or substituted ammonium, p is from 0 to 2, and n is at least 10, and mixtures thereof, and wherein the polycarboxylate polymer comprises copolymeric polycarboxylate of formula I in which Y is a maleic-acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400".

Claim 1 according to the **auxiliary request** differed from Claim 1 of the main request only in that component b(i) was defined as

"polymer having a magnesium building capacity of at least 3.0 moles/kg at both 25°C and 90°C and being selected from compounds having the empirical formula I



wherein X is CH_2, Y is a comonomer or comonomer mixture, R^1 and R^2 are bleach and alkali-stable polymer-end groups, R^3 is H or C_{1-4} alkyl, M is H, alkali metal, alkaline earth metal, ammonium or substituted ammonium, p is from 0 to 2, and n is at least 10, and mixtures thereof,
and wherein the polycarboxylate polymer consists of copolymeric polycarboxylate of formula I in which Y is a maleic-acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400, or wherein the polycarboxylate polymer consists of a mixture of (i) a copolymeric polycarboxylate having the general formula I:



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wherein X is CH_2, Y is a maleic-acid derived unit, R^1 and R^2 are bleach and alkali stable polymer-end groups, R^3 is H, M is H, alkali metal, alkaline earth metal, ammonium or substituted ammonium, p is from 0.1 to 1.9 and n averages from 120 to 400, and
(ii) a homopolymeric polyacrylate having the general I in which X, R^1, R^2, R^3 and M are each as defined in (i) above, p is O and n averages from 10 to 90,
the weight ratio of copolymeric polycarboxylate to homopolymeric polyacrylate being at least 1:1".

The Respondents requested that the appeal be dismissed.

VII. In support of his requests, the Appellant submitted that he had shown during the opposition proceedings that one of the polymers of formula I used in the examples, namely that abbreviated as "PC4", met all requirements of the amended Claim 1. This polymer corresponded, in his opinion, to a polymer of formula I wherein "n" was 127. Since the patent in suit also described a

reliable method for determining the magnesium building capacity, it was not an undue burden for a person skilled in the art to test further polymers of formula I in order to find other polymers having the required magnesium building capacity, at least in respect of the very limited number of polymers to be considered according to Claim 1 of the auxiliary request.

VIII. In support of their request, Respondents I submitted that the amendment on page 4 of the description, concerning the deletion of the above-mentioned second definition of "n" (see point II above) did not satisfy the requirement of Article 123(2) EPC.

While Respondents I were prepared to accept that the n-value of the polymer "PC4" was correctly calculated by the Appellant, Respondent II contended that the average molecular weight of this polymer, upon which the said calculation was based, was not the molecular weight of the free acid, but the molecular weight of the corresponding sodium salt. Therefore, in relation to the correct basis, the value of "n" of this polymer was only 95, i.e. outside the range specified in Claim 1 of both requests.

Regarding sufficiency of disclosure, all Respondents submitted that neither the patent in suit nor the application as filed provided any guidance as to how to find any polymer having the required magnesium building capacity, and that, therefore, the invention as defined in Claim 1 of both requests was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. They argued in particular that the Appellant himself had submitted, during the opposition proceedings, a table listing the

magnesium building capacities of a number of commercially available polymers, containing one polymer (Alcosperse 175) which met all the structural requirements of formula I but had a magnesium building capacity below 3.0 at 25°C.

IX. At the end of the oral proceedings the decision of the Board was given orally.

Reasons for the Decision

1. The appeal is admissible.

2. The Board is satisfied that the sets of claims according to the main and the auxiliary request meet the requirements of Article 123(2) and (3) EPC. Since the appeal had to be dismissed for another reason, it is not necessary to give reasons for this finding. Nevertheless, the Board observes that the deletion of one of two definitions of "n" which were both disclosed in the application as filed does not infringe Article 123(2) EPC. Respondents I did not dispute that the definition now retained was that already used in Claim 1 as filed and in the part of the description reciting the wording of that claim (see the description as filed, from page 2, line 22, to page 3, line 2, from the bottom). The deletion from the description of the alternative definition was thus no more than the removal of an inconsistency between the claims and the description.

3. *Main request*

3.1 The clarity of Claim 1 as amended during oral proceedings has not been disputed by the Respondents. In particular, Respondents I did not maintain their objection to the reliability of the "turbidity method" described in the patent in suit (see page 3, lines 49 to 54 of the description). However, it was in dispute whether the description disclosed a polymer satisfying the definition of component (b)(i) of the claimed detergent composition, because polymer "PC4" (described on page 10, lines 34 and 35, of the description of the patent in suit), while having the required magnesium building capacity, was said to have a number of acrylic acid derived units (corresponding to the number "n" in formula I) below that required by Claim 1. Although Respondents I were prepared to accept the Appellant's submission that the average molecular weight of about 15 500 given for this product on page 10 of the description of the patent in suit related to the polymer in the acid form, the Board has doubts about whether this interpretation of the disclosure of the patent in suit is correct. The reason for this is that in formula I the number "n" defines the number of the acrylic acid derived units wherein M may be an alcali metal. The value of "n" must be calculated from the weight average molecular weight, which should relate to the indicated product, hence the sodium salt in the case of the products "PC1" to "PC5" mentioned on page 10 of the description of the patent in suit. On that basis, it is rather doubtful whether the present Claim 1, the subject-matter of which is inter alia defined by the magnesium building capacity, would be sufficiently supported by the description of the patent in suit, in the absence of any indication as to which available products are meant by this definition. However, similar considerations apply in respect of the requirement of

sufficiency of disclosure (see also decision T 409/91, OJ EPO 1994, 653, points 3.3 to 3.5 of the reasons). Since the decision under appeal was also based on the finding that the compositions defined by Claim 1 underlying this decision were not sufficiently disclosed, the Board need not take a decision on the issue of sufficient support by the description of Claim 1 under Article 84 EPC. It has decided to proceed, instead, to the examination of the issue of sufficiency of disclosure.

3.2 In the Boards judgment, the requirements of Article 83 or 100(b) EPC are only met if the invention as defined in the amended Claim 1 can be performed by a person skilled in the art in the whole area claimed without undue burden, using common general knowledge and having regard to the examples and the further information given in the patent in suit.

Contrary to the view expressed by the Appellant, the Respondents disputed that it was possible to obtain a polycarboxylate polymer having the structure defined by formula I in Claim 1 and a magnesium building capacity as defined in that claim without undue burden, and argued that, in these circumstances, the claimed invention could not be carried out.

In respect of the disclosure in the application as filed or the description of the patent in suit and common general knowledge, the following facts were established during the oral proceedings:

3.2.1 The Appellant did not dispute that, after Respondents I had failed to obtain a sample of a polymer of formula I, in which Y is a maleic acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400, having the required magnesium building capacity, he was unable to

provide them with a sample of such a product. The Appellant further admitted during oral proceedings that the magnesium building capacity was not a usual parameter for characterising polycarboxylate polymers which was normally determined and made publicly available for commercial products of this type. In addition, the Appellant did not dispute that the application as filed or the patent in suit failed to provide a reliable method for obtaining suitable products, and admitted that there was no explicit indication of the magnesium building capacity of the polymers used in the examples.

Therefore, the sole specific information relating to the required magnesium building capacity of the polycarboxylate polymers made available by the application as filed or the patent in suit concerned the method for determining it.

3.2.2 During the opposition proceedings, the Appellant has submitted, in Appendix I to the letter received on 15 November 1989, the magnesium building capacities (determined by him according to the method disclosed in the description of the patent in suit, page 3, lines 47 to 54) of some commercially available polymers of formula I, wherein X is CH_2, Y is a comonomer or comonomer mixture, R^1 and R^2 are bleach and alkali-stable polymer-end groups, R^3 is H or C_{1-4} alkyl, M is H, alkali metal, alkaline earth metal, ammonium or substituted ammonium, p is from 0 to 2, and n is at least 10. Among other products, this list contains the maleic/acrylic copolymer "Alcosperse 175", having a magnesium building capacity of 2,75, i.e. outside the range specified in

Claim 1. The Appellant did not dispute the Respondents' submission that this product is a product of formula I, in which Y is a maleic acid derived unit, p is 0.43 and n is 208 (see Annex 2 to the minutes of the oral proceedings before the Opposition Division).

It follows that there is no correlation between the above structural parameters and the magnesium building capacity. This was not disputed by the Appellant. Moreover, having regard to the uncertainty as to whether the sole product specifically disclosed in the application as filed and the patent in suit that turned out to have the required magnesium building capacity - according to the Appellant's submission during the opposition proceedings -, meets the **structural** requirements of Claim 1, it is even questionable whether one single product had been disclosed which would satisfy **all** requirements set out in Claim 1.

3.2.3 The Appellant has not provided any evidence in support of his allegation that the number of products comprised by this definition, which would have to be tested for their magnesium building capacity, was in fact small. The Respondents' submission that the above definition of component (b)(i) comprises a host of products which may or may not possess the required magnesium building capacity being prima facie credible, having regard to the range of n-values and monomer ratios to be considered (see point VI above), the Board concludes that the number of possible components b)(i) to be synthesised and tested is indeed very large.

3.3 In these circumstances, the Board cannot accept the Appellant's submission that it would not amount to an undue burden for a person skilled in the art to synthesise all products of formula I in which Y is a maleic acid derived unit, p is from 0.1 to 1.9 and n

averages from 120 to 400, and to determine their magnesium building capacity. On the contrary, in the absence of any indication of a suitable product in the description of the patent in suit (see point 3.2.1 above) and without any guidance as to how to synthesise such a product with an adequate statistical rate of success, the Board comes to the conviction that it would require an extended experimental search with quite an uncertain expectation of success to find suitable products of formula I in which Y is a maleic acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400, and which have a magnesium building capacity of at least 3.0 moles/kg at both 25°C and 90°C (see decision T 226/85, OJ EPO 1988, 336, reasons points 7 and 8; and decision T 435/91, OJ EPO 1995, 188, reasons point 3.2).

On the basis of the available evidence, the Board is thus not satisfied that the patent in suit discloses the subject-matter of the present Claim 1 in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, as required by Article 83 EPC.

3.4 For this reason, the main request must fail.

4. *Auxiliary request*

4.1 Claim 1 of the auxiliary request differs from Claim 1 of the main request only by a more restricted definition of the polymer component b(i). However, this definition still comprises the products of formula I in which Y is a maleic acid derived unit, p is from 0.1 to 1.9 and n averages from 120 to 400, and which have a magnesium building capacity of at least 3.0 moles/kg at both 25°C and 90°C. Therefore, the facts established under point 3.2 above in respect of the compositions defined

in Claim 1 of the main request apply equally here, although the group of compositions defined by Claim 1 of the auxiliary request is certainly narrower than that defined in Claim 1 of the main request.

4.2 Consequently, the auxiliary request must fail for substantially the same reasons as those set out, under point 3.3 above, in respect of Claim 1 of the main request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier A. Nuss

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