BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 406/91 - 3.3.1

Application No.: 80 304 093.0

Publication No.: 0 030 096

Title of invention: Detergent composition

Classification: C11D 17/00

D E C I S I O N
of 22 October 1992

Proprietor of the patent: IMPERICAL CHEMICAL INDUSTRIES PLC

Opponent: 01) Henkel Kommanditgesellschaft auf Aktien
02) Unilever N.V.

Headword: Detergent composition/ICI

EPC Articles 56 and 83

Keyword: "Sufficiency (yes)"
"Inventive step (confirmed)"

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 406/91 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 22 October 1992

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Decision under appeal :
Decision of the Opposition Division of the European Patent Office of 4 December 1990, with written reasons posted on 20 March 1991, concerning maintenance of European patent No. 0 030 096 in amended form.

Composition of the Board :

Chairman : K.J.A. Jahn
Members : R.W. Andrews
G. Davies

Summary of Facts and Submissions

I. European patent No. 0 030 096 in respect of European patent application No. 80 304 093.0, which was filed on 14 November 1980, was granted on 5 October 1983 (cf. Bulletin 83/40). By a decision issued orally on 13 January 1987 with written reasons being issued on 26 February 1987, the Opposition Division revoked the patent. On appeal, the subject-matter of the main claim submitted during the oral proceedings held on 19 April 1988 was held to be novel. However, since the amendment to the claim created a new situation the Board decided to remit the case to the Opposition Division for further prosecution on the basis of this claim (cf. T 150/87 - 3.3.2).

II. In a decision given orally on 4 December 1990, with the corresponding written interlocutory decision being issued on 20 March 1991, the Opposition Division maintained the patent on the basis of the above-mentioned main claim. The Opposition Division held that the proposed solution to the problem of improving or broadening the cleaning effect of the compositions disclosed in US-A-3 169 930 (document (1)) without upsetting the stability of the dispersion was inventive since there was no suggestion in the prior art that stable dispersions may be obtained when the mean diameter of the solids was in the range 2.5 to 10μm.

III. Appeals were lodged against this decision on 15 and 20 May 1991 with payment of the prescribed fees. Statements of Grounds of Appeal were filed on 3 and 17 July 1991. In their Statement of Grounds and during the oral proceedings held on 22 October 1992, the Appellants maintained their objection to the expression "mean diameter of the solids" since it was clear from Kirk-Othmer, Encyclopedia of Chemical Technology, Volume 18, Second Edition, pages 310 to 324 (document (16)) and ibid Volume 21, Third Edition,

pages 106 to 109 (document (17)) that there are many average or mean diameters and that the choice of the type of mean value employed depends on which property of the whole mass of particles is of interest. In the absence of any indication of the true meaning of this expression or how it is measured in the disputed patent the alleged invention was insufficiently disclosed. Additionally, Appellant 02 considered the disclosure of the disputed patent insufficient since it had not been possible to obtain a composition of having a pour point of 7°C by repeating the example of the patent in suit. In this Appellant's opinion this demonstrated that the pour point of the composition is heavily influenced by the non-ionic blend. However, the disputed patent was completely silent in this respect.

Both Appellants alleged that compositions containing substantial amounts of colloidal particles were not excluded by specifying that the mean diameter of the solids of the composition is at least 2.5μm and at most 10μm and that 90% of the solid particles have diameters less than 10μm. However, according to both Appellants, document (1) taught that stable dispensions are obtained by adding particles with diameters in the range 25 to 30μm to dispersions of finely divided non-colloidal and colloidal particles of builders in non-ionic surfactants. Therefore, it was not inventive to slightly increase the particle size distribution of the dispersion and add bleach to it. Similarly, a combination of the disclosure of DE-A-2 825 218 (document (5)) with that of document (1) rendered the claimed subject-matter obvious since the skilled person would be motivated by the teaching of document (1) to eliminate the non-functional dispersant from the compositions of document (5).

IV. The Respondent argued that the expression "mean diameter of the solids" would be well understood by the skilled

person as referring to the number mean and the fact that various sophisticated mathematical procedures may be employed in the statistical treatment of size distribution should not obscure the natural meaning of a term in common use with a clear established dictionary definition.

The Respondent also maintained that the present claim excluded compositions containing substantial amounts of colloidal particles. It was only by means of very unrealistic particle size distributions that it could be demonstrated that a mean diameter of 2.5μm included substantial numbers of particles having diameters below 1.0μm.

The Respondent further contended that Appellant 02 had not exactly repeated the example of the patent in suit. However, since commercial catalogues of non-ionic surfactants included the pour points of the various products, and the disputed patent indicates how to get the right pour point, the invention was sufficiently disclosed.

With respect to inventive step, the Respondent contended that, in view of the cited prior art, it was surprising that the problem underlying the disputed patent of eliminating the need for colloidal particles could be solved and was solved by the simple expedient of using particles in the claimed size range. In the Respondent's view the invention had been shown to have commercial merit and to satisfy a long-felt want in the detergent field by providing liquid, non-aqueous detergent compositions which contain bleach.

V. The Appellants requested that the decision under appeal be set aside and that the patent be revoked. The Respondent requested that the patent be maintained on the basis of

Claims 1 to 8 and amended pages 2 and 3 of the description submitted as the main request during oral proceedings; alternatively on the basis of Claim 1 submitted as an auxiliary request during oral proceedings.

Claim 1 of the Respondent's main request reads as follows:

"A liquid detergent composition which comprises a dispersion of solids comprising at least one builder and at least one bleach, the mean diameter of the solids of the composition being at least 2.5μm and at most 10μm, in a substantially water free non-ionic liquid surfactant which composition has a pour point of less than 10°C, the composition being free from dispersants for the solids and free from soaps and at least 90% of the solid particles have diameters less than 10μm."

Claim 1 of the auxiliary request is identical to Claim 1 of the main request apart from the addition of the expression "said composition being obtainable by bead milling the components".

VI. At the conclusion of the oral proceedings, the Board's decision to maintain the patent on the basis of the Respondent's main request was announced.

Reasons for the Decision

1. The appeals are allowable.

2. There are no objections under Article 123 EPC to the present versions of the claims. Claim 1 of the main request represents a combination of Claim 1, which was found to be allowable under this Article in the Decision

T 150/87 of 19 April 1988, and Claim 5 as filed and granted. Claims 2 to 8 of the main request correspond to granted Claims 2 to 4, 6, 7, 9 and 10 respectively.

The expression "being obtainable by bead milling" in Claim 1 of the auxiliary request is based on the example of the patent in suit.

3. With respect to the expression "mean diameter", the Board is convinced that, in the absence of any indication to the contrary, the skilled person would interpret this as referring to the number mean; i.e. the sum of the diameters of the particles divided by the number of particles. Although it is clear from documents (16) and (17) that mean diameter may be defined in several different ways, such as, for example, number mean, surface mean, volume or weight mean, and that the value obtained for the mean depends on the definition adopted, the number mean is the first one mentioned in the list on page 316 of document (16) if the six means of dubious value are ignored. Similarly, the number mean is the first one listed in Table 1 on page 107 of document (17) and the first one exemplified by calculation (cf. first complete paragraph above Table 1). Therefore, the Board is satisfied that, since it cannot be deduced from the description of the disputed patent which property of the particles (for example, size, volume, surface area) is of greatest significance for the stabilisation of the claimed compositions, the skilled person would consider that the dictionary meaning of mean or average is intended, i.e. the number mean (cf. The Oxford English Dictionary, Volume 1, page 583, where average is defined as to estimate, by dividing the aggregate of a series by the number of its units). Furthermore, in view of the size range under consideration it is clear that electron microscopy would be used to determine the particle size.

3.1 It is the established jurisprudence of this Board that a statement by an Opponent that an example of a patent has been repeated once "exactly as described" without obtaining exactly the described result as set out and claimed in the patent is clearly in principle quite inadequate to discharge the Opponent's burden of proof that, on the balance of probabilities, a skilled reader using his common general knowledge would be unable to carry out the invention (cf. T 189/89, OJ EPO 1991, 391 especially page 397).

In the present case, Appellant 02 claimed that a repetition of the example of the disputed patent had given a composition with a pour point of 12°C instead of 7°C as reported in the example (cf. Appendix 5 to the opponent's letter filed on 6 April 1989). However, Appellant 02 admitted that the example of the disputed patent had not been faithfully reproduced since surfactants which were only said to be the equivalents of those used in the example had been employed. Even in the light of this evidence, the Board is satisfied that the skilled person would be able to reduce the invention to practice without undue burden on the basis of the example and the information regarding suitable surfactants set out on page 2, line 47 to page 3, line 7 of the patent in suit, particularly that relating to the type of surfactants which fulfills both a surfactant function and reduces the pour point of the composition.

In the Board's judgment, therefore, the disclosure of the disputed patent is sufficient for the invention to be carried out by the skilled person.

4. The disputed patent relates to a liquid detergent composition having acceptable stability containing a

dispersion of solids comprising at least one builder and at least one bleach in a substantially water-free non-ionic liquid surfactant.

Document (5), which the Board considers to represent the closest state of the art, discloses stable non-aqueous liquid detergent compositions containing the above-mentioned ingredients (cf. Claim 1 in combination with page 5, line 3, page 8, line 12 and Examples 2 to 4). However, a disadvantage of those prior art compositions was the necessity to use a dispersant to facilitate and to stabilise the dispersion. The dispersant, for example, finely divided silica, does not contribute to the detergency of the compositions and may be deposited on the washed laundry.

Therefore, in the light of the closest prior art, the technical problem underlying the patent in suit is to provide liquid built detergent compositions without resorting to the use of dispersants to provide adequate stability (cf. disputed patent, page 2, lines 14 to 22).

According to the disputed patent this technical problem is essentially solved by ensuring that the mean diameter of the solids in the compositions is between 2.5μm and 10μm and that at least 90% of the solid particles have diameters less than 10μm.

In the light of the example in the patent in suit, the Board is satisfied that this technical problem has been solved.

5. In the Decision T 150/87 of 19 April 1988 it was held that the subject-matter of the main claim underlying the decision was novel (cf. paragraph 5). The present Claim 1 only differs from that main claim insofar as it includes

the further requirement that at least 90% of the solid particles have diameters less than 10μm. Since, in the absence of any new citations, the finding in the Decision T 150/87 with respect to novelty is binding upon the present Board, Appellant 02's arguments regarding novelty in the light of the disclosure of document (5) cannot be entertained.

6. It still remains to be decided whether the claimed subject-matter involves an inventive step.

As previously mentioned document (5) discloses liquid detergent composition containing builders and bleach dispersed in substantially water-free non-ionic surfactants with the aid of dispersants, such as, for example, silica (cf. page 5, lines 18 to 25 and Examples 2 to 4). Since the document clearly teaches that a dispersant is absolutely essential if a liquid detergent of acceptable stability is to be obtained, it would be of no assistance to the skilled person seeking to solve the present technical problem.

6.1 Document (1) discloses a built liquid detergent composition containing a liquid non-ionic surfactant and a colloidal suspension of polyphosphate salts in said non-ionic surfactant (cf. column 2, lines 21 to 24). According to this document, it is essential in the process of preparing the composition that the dehydrating vehicle, in which the colloidal anhydrous builder salt has been precipitated, is distilled off in the presence of the colloidal anhydrous polyphosphate salt and the liquid non-ionic surfactant (cf. column 2, lines 43 to 52).

Moreover, it is also stated that a colloidal suspension is only formed after the water of dehydration of the hydrated polyphosphate salt is removed during the dehydrating step

and as a result of dehydration the colloidal particles are participated in the dehydrating vehicle and that it is only after a colloidal suspension is formed that a stable suspension results (cf. column 3, lines 55 to 66).

This document further discloses that mechanically produced fine particles (25 to 30μm) of inorganic polyphosphate builder may be added to the mixture or to the non-ionic in an amount up to 50% of the total polyphosphate builders and will be prevented from settling by the fine colloidal dispersion of dehydrated polyphosphate (cf. column (4), lines 6 to 13).

Finally, this document discloses that the size of the colloidal polyphosphate is from about 0.015 to about 50μm, and that the usual particle size distribution is such that about 95% is below 10μm and about 50% is below 1μm (cf. column 3, line 74 to column 4, line 6).

In the Board's judgment, the skilled person would conclude from the disclosure of document (1) that substantial amounts of colloidal particles are a prerequisite for providing a stable dispersion of solids in non-aqueous non-ionic surfactants. This would be reinforced by the only methods disclosed for the preparation of these prior art compositions and the clear distinction drawn between suspensions containing particles of non-colloidal dimensions and those containing particles of this dimension (cf. column 3, lines 55 to 60).

6.2 If, as the Appellants contended, the present composition contains substantial quantities of colloidal particles and, therefore, the only differences between them and those disclosed in document (1) lay in a small increase in the mean particle size and the addition of a solid bleach, the Board would agree that the claimed subject-matter

would not involve an inventive step. However, the Board finds, in agreement with the Decision T 150/87, that a true construction of the present Claim 1 excludes the presence of substantial amounts of colloidal particles. Thus, in the Board's judgment, a realistic particle size distribution curve for a sample of solid particles in which at least 90% of the particles have diameters less than 10μm and the mean particle diameter of the sample is 2.5μm would exclude any possibility of substantial amounts of particles of colloidal dimension being present. The Board considers that a realistic size distribution curve would exclude distribution curves with two so-called peaks as would be obtained, for example, by mixing particles with different mean diameters. It is highly doubtful that a skilled person would express the result from such a distribution curve in terms of a single mean particle diameter.

7. In view of the above the Board finds that the proposed solution to the technical problem of providing stable liquid detergents without the aid of dispersants is inventive. Therefore, the subject-matter of Claim 1 involves an inventive step. Claims 2 to 8, which relate to preferred embodiments of the compositions according to Claim 1, are also allowable.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the main request submitted during oral proceedings.

The Registrar: The Chairman:

E. Görgmaier K.J.A. Jahn