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D E C I S I O N
of 14 April 2003

Case Number: T 0209/02 - 3.3.6

Application Number: 00108136.3

Publication Number: 1050576

IPC: C11D 1/722

Language of the proceedings: EN

Title of invention:

Non-ionic surfactant with a low foaming power

Applicant:

SASOL ITALY S.p.A.

Opponent:

-

Headword:

Nonionic surfactant/SASOL

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Novelty (yes)"

"Inventive step (yes): unexpected cleaning efficiency in the light of the teaching of the prior art"

Decisions cited:

G 0002/88, G 0006/88, T 0551/89

Catchword:

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Case Number: T 0209/02 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 14 April 2003

Appellant:

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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 22 November 2001
refusing European patent application
No. 00 108 136.3 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: L. Li Voti
C. Holtz

Summary of Facts and Submissions

I. This appeal lies from the decision of the Examining Division to refuse European patent application No. 00 108 136.3, relating to a low foaming nonionic surfactant and to its use.

II. The application as filed contained a set of 3 claims.

This set of 3 claims contained *inter alia* an independent product claim and an independent use claim.

III. In its decision the Examining Division, referring to document

(1): US-A-5110503,

found that the claimed product and its use were not novel in the light of the teaching of this document.

IV. An appeal was filed against this decision.

During the written procedure the Appellant and Applicant filed various sets of amended claims and an experimental report under cover of a letter dated 17 December 2002.

The Board expressed its provisional opinion *inter alia* in a communication dated 24 September 2002 and in the annex to the summons to attend oral proceedings of 28 January 2003. The Appellant was informed that document

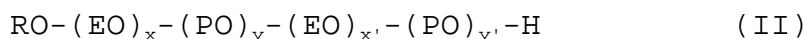
(3): EP-A-0882785

had to be considered as the most suitable starting point for discussing inventive step of a claim relating to the use of a nonionic surfactant of type (II) in the absence of other surfactants.

- V. During the oral proceedings held before the Board on 14 April 2003 the Appellant withdrew the previously filed requests and filed an amended set of 2 claims to be considered as the only request.

Claim 1 of this request reads as follows:

"1. Use of a nonionic surfactant consisting of a product of general formula (II):



wherein R represents a linear or branched alkyl radical containing from 9 to 15 carbon atoms, PO and EO respectively represent an oxypropylene and oxyethylene unit, x, x', y and y', the same or different, represent the numbers of moles of said oxypropylene and oxyethylene units and range from 0.5 to 4, in water diluted detergent compositions for detergent purposes wherein said compositions consist of said nonionic surfactant of formula (II) and water."

Dependent claim 2 relates to a specific embodiment of the claimed use.

An amended version of the experimental report of 17 December 2002 containing additional experimental evidence was also filed during oral proceedings.

- VI. The Appellant has submitted in writing and orally

during oral proceedings *inter alia* that

- document (1) did not disclose the use of the selected nonionic surfactant in water diluted detergent compositions for detergent purposes in the absence of other surfactants and therefore did not take away the novelty of the claimed use;
- document (3) related to the use of low foaming nonionic surfactants having excellent cleaning properties; these surfactants differed from those of the present application insofar as they did not contain an additional terminal propylene oxide block;
- document (3), however, taught that a terminal propylene oxide block was believed not only to depress the foaming properties of a nonionic surfactant having ethylene oxide and propylene oxide blocks but also to reduce remarkably its cleaning properties;
- the experimental evidence filed during oral proceedings showed that the selected nonionic surfactant unexpectedly provided improved cleaning in respect to similar surfactants according to the teaching of document (3) not containing a terminal propylene oxide group;
- the claimed subject-matter thus involved an inventive step.

VII. The Appellant requests that the decision of the Examining Division be set aside and that a patent be granted on the basis of claims 1 and 2 of the request

submitted in the oral proceedings.

VIII. At the end of the oral proceedings, the chairman announced the decision of the Board.

Reasons for the Decision

1. *Article 123(2) EPC*

The Board is satisfied that the claims comply with the requirements of Article 123(2) EPC since their wording is supported by the application as originally filed (see e.g. page 1, lines 10 to 12; page 7, line 16 to page 8, line 16 and claim 3).

2. *Novelty*

2.1 Present claim 1 relates to the use of a specific nonionic surfactant of formula (II) in a water diluted detergent composition consisting only of this surfactant and water for detergent purposes (see point V above).

The wording "for detergent purposes" limits unambiguously the claimed use to the cleansing of a substrate.

According to the established jurisprudence of the Boards of Appeal, in a second or further non-medical use of a known compound for achieving a technical effect, the attainment of such a technical effect has to be considered a functional technical feature of the claim. The claim is thus to be regarded as being novel if this functional technical feature has not been

previously made available to the public by any of the means set out in Article 54(2) EPC, e.g. by a prior art document disclosing directly and unambiguously the subject-matter in question when also taking account of everything which would be considered by a skilled person as part of the common general knowledge in connection with the disclosed subject-matter at the publication date of the cited document, even though the technical effect might have inherently taken place in the course of carrying out what had previously been made available to the public (G 2/88, OJ EPO 1990, 93, point 10.3 of the reasons for the decision and G 6/88, OJ EPO 1990, 114, point 9 of the reasons for the decision).

2.2 Document (1) discloses the use of a nonionic surfactant according to present formula (II) in combination with a specific amphoteric surfactant for the demulsification of a wash liquor or for enhancing the cleaning efficiency of cleaning compositions (see column 2, line 65 to column 3, line 5; column 3, lines 14 to 62, column 4, lines 34 to 45; column 6, lines 18 to 19 and 24 to 25).

Moreover, example I in column 6 of this document, especially lines 40 to 43, discloses the preparation of a water diluted detergent composition which comprises 1% by weight of a non-ionic surfactant consisting of a product according to the general formula (II) of the present application for the purpose of determining its cloud point. This diluted composition is, however not used for cleansing a substrate; on the contrary, this surfactant has to be combined with an amphoteric surfactant for preparing a laundry detergent (see column 6, lines 30 to 40).

Therefore, document (1) does not disclose the use in cleansing a substrate of a nonionic surfactant of formula (II) in the absence of other surfactants.

Finally, document (3) relates to the use of nonionic detergent surfactants differing from that of present claim 1 insofar as they do not contain an additional terminal propylene oxide block (see page 3, lines 1 to 9).

Therefore, the Board concludes that the subject-matter of claim 1 is novel over the cited prior art.

3. *Inventive step*

3.1 The present application and, in particular, the subject-matter of claim 1 relates to the use of a specific nonionic surfactant of formula (II) in low foaming aqueous detergent compositions for detergent purposes, i.e. for cleansing a substrate, wherein the low foaming properties are assured by the use of the surfactant of formula (II) in the absence of other surfactants (see page 1, lines 10 to 13; page 2, line 21 to page 3, line 4; page 7, lines 17 to 21 of the application as filed).

The present application discusses the properties of the nonionic surfactants known from document (3), differing from those used in the present application insofar as they do not contain an additional terminal propylene oxide (see point 2.2 above), in the passage from page 1, line 19 to page 2, line 20 and considers the technical problem underlying the claimed invention to be the provision of a low foaming nonionic surfactant having higher detergent properties than traditional

nonionic surfactants and not having the alleged drawbacks of the surfactants known from document (3).

- 3.2 The Board finds that document (3) relates, similarly to the present application, to the use of a nonionic surfactant in water in order to provide a composition which defoams rapidly and has high detergency (see page 2, lines 47 to 55) and shows in the examples that this surfactant can be efficaciously used in the absence of other surfactants.

Document (1) requires instead the use of a nonionic surfactant in combination with an amphoteric surfactant (see point 2.2 above).

Therefore, the Board takes document (3) as the starting point for evaluating inventive step.

- 3.3 During oral proceedings the Appellant put forward that the technical problem underlying the claimed invention in respect to document (3) can be seen in the provision of other nonionic surfactants able to provide a stronger defoaming than those of document (3) and at least the same detergency.

The experimental report submitted by the Appellant during oral proceedings contains a comparison of a compound D according to the teaching of document (3) and very similar to the compound of example 2 of this document with a surfactant C, according to the present invention, differing from the former only insofar as it contains an additional terminal propylene oxide block.

These tests show that compound C provides a far better defoaming **and** better cleaning than compound D.

The Board thus agrees that the technical problem mentioned above has been effectively solved by the present invention.

- 3.4 Document (3) teaches that a terminal propylene oxide block was believed to depress the foaming properties of a nonionic surfactant having ethylene oxide and propylene oxide blocks (see e.g. document (3), page 2, lines 20 to 22 and 24 to 26).

For the skilled person it was therefore to be expected, that a compound C, according to the present invention, would provide a better defoaming than a similar compound D without the additional terminal propylene oxide block according to document (3), as shown in the experimental evidence filed during oral proceedings (see also point 3.3 above).

The unexpected fact that the foaming reduction was extremely strong, as argued by the Appellant during oral proceedings, has thus no bearing on the finding that a skilled person would have expected a foam reduction already because of the structure of the selected surfactant (II) having a terminal propylene oxide block (see T 551/89, not published in the OJ EPO, point 4.4 of the reasons for the decision).

However, the same passage of document (3) teaches that a terminal propylene oxide block is expected to reduce remarkably the cleaning efficiency of the surfactant. Therefore, the skilled person would not have found any incentive in document (3) for choosing with a reasonable expectation of success the claimed subject-matter as a solution for the existing technical problem as defined above in point 3.1. On the contrary, it

would have found in the teaching of this document a warning in regard to the cleansing properties of such surfactants.

It is surprising therefore, in the Board's view, that compound C provides better cleaning results than compound D, as also shown in the experimental report filed during oral proceedings.

The similar comparison, also contained in said experimental report, of a compound (A) having a C₁₁ alkyl chain with a similar compound (B) differing only in the absence of the terminal propylene oxide block (this compound (B) not being according to the teaching of document (3), which requires an alkyl chain of C₁₂₋₁₅) shows also that, unexpectedly, the cleaning efficiency of compound (A) is at least comparable with that of compound (B).

- 3.5 From the foregoing it follows that a skilled person could have envisaged to replace the nonionic surfactants used in document (3) with similar surfactants already known in the art, e.g. those known from document (1), but he would have expected a remarkable reduction of the cleaning efficiency.

Since, contrary to the teaching of the prior art, the selected nonionic surfactant (II) have, unexpectedly, better or equal cleaning efficiency in respect to similar surfactants without the terminal propylene oxide block, the Board concludes that the subject matter of claims 1 and 2 involves an inventive step.

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 grant a patent with claims 1 and 2 as submitted in the oral proceedings and a description to be adapted thereto.

The Registrar:

The Chairman:

G. Rauh

P. Krasa