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D E C I S I O N
of 10 February 2006

Case Number: T 0322/04 - 3.3.06

Application Number: 95939353.9

Publication Number: 0799298

IPC: C11D 3/39

Language of the proceedings: EN

Title of invention:
Thickened peracid compositions

Patentee:
SOLVAY INTEROX LIMITED

Opponent:
HENKEL KGaA

Headword:
Thickened composition/SOLVAY

Relevant legal provisions:
EPC Art. 56

Keyword:
"Novelty: no ground of opposition"
"Inventive step (main request) - no: composition obvious
because already disclosed in the prior art"
"Inventive step (auxiliary request) - yes: non-obvious
modification of the prior art"

Decisions cited:
G 0007/95

Catchword:
-



Case Number: T 0322/04 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 10 February 2006

Appellant:
(Opponent)

HENKEL KGaA
VTP (Patente)
D-40191 Düsseldorf (DE)

Representative:

-

Respondent:
(Proprietor of the patent)

SOLVAY INTEROX LIMITED
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Representative:

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 15 January 2004
rejecting the opposition filed against European
patent No. 0799298 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. Krasa
Members: P. Ammendola
A. Pignatelli

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition division rejecting the opposition against the European patent No. 0 799 298, relating to a thickened peracid composition.

II. The patent as granted comprised twenty-six claims, whereby claims 1, 2 and 26 were independent and read:

"1. *Thickened aqueous compositions comprising a soluble peracid in solution together with a thickener characterised in that the thickener comprises in an amount sufficient to increase the viscosity of the composition:*

(a) *an aliphatic alcohol ethoxylate having the general formula:*



in which R¹ and R² are hydrogen or linear or branched alkyl such that R¹ plus R² has a total of from 7 to 22 carbon atoms, and n is selected in the range of 1 to 15, such that the number ratio of carbon atoms in R¹ plus R² : n is greater than or equal to 3 : 1 and

(b) *a co-surfactant selected from the group consisting of anionic surfactants, amine oxides, amphoteric surfactants and quaternary ammonium."*

"2. *A process for thickening soluble peracid solutions, characterised in that it comprises introducing in*

an amount sufficient to increase the viscosity of the composition:

- (a) *an aliphatic alcohol ethoxylate having the general formula:*



in which R^1 and R^2 are hydrogen or linear or branched alkyl such that R^1 plus R^2 has a total of from 7 to 22 carbon atoms, and n is selected in the range of 1 to 15, such that the number ratio of carbon atoms in R^1 plus R^2 : n is greater than or equal to 3 : 1 and

- (b) *a co-surfactant selected from the group consisting of anionic surfactants, amine oxides, amphoteric surfactants and quaternary ammonium."*

"26. *A method for disinfecting and/or cleaning hard surfaces, characterised in that it comprises contacting the hard surface with a composition according to claim 1 or any one of claims 4 to 25."*

Claims 3 to 25 defined preferred embodiments of the composition of claim 1 and/or of the process of claim 2.

III. The Opponent, in its notice of opposition, had sought revocation of the patent in suit on the grounds of lack of inventive step (Article 100(a) in combination with Articles 52(1) and 56 EPC). It had cited, *inter alia*, the following documents:

(3) = EP-A-0 147 207

(4) = EP-A-0 337 516

IV. In its decision, the Opposition division found, *inter alia*, that, while document (4) disclosed aqueous disinfecting compositions comprising solid organic peracids, granted claim 1 referred to disinfectant peracid solutions.

The Opposition division considered surprising for the skilled person that the alkyl alcohol ethoxylate thickener "(a)" (hereinafter "AAE") rendered the patented compositions stable upon storage. Even if AAE had already been used in the peracid suspensions disclosed in document (4), this fact would not render obvious the use of AAE to stably improve viscosity in peracid solutions, since document (4) contained no information on the chemical stability upon storage of the portion of peracid ingredient actually dissolved in the aqueous phase and/or on the stability of the achieved viscosity.

V. The Opponent (hereinafter "Appellant") lodged an appeal against this decision.

VI. During the oral proceedings held before the Board on 10 February 2006, the Patent proprietor (hereinafter "Respondent") filed a set of twenty-six claims labelled "*auxiliary request nr.1*". The claims of this auxiliary request differed from those of the patent as granted only in that:

- in claim 1 the wording "*soluble peracid in solution*" had been replaced by "*soluble aliphatic peracid containing up to 6 carbon atoms in solution*",

and

- in claim 2 the wording "*soluble peracid solutions characterised*" had been replaced by "*soluble aliphatic peracid solutions the peracid containing up to 6 carbon atoms characterised*".

VII. The Appellant argued in writing and orally substantially as follows.

The fact that the patent in suit listed among the suitable peracids also monoperphthalic acid (hereinafter "MPA") demonstrated that the group of chemical compounds defined therein by the term "*soluble peracids*" encompassed also compounds with a solubility in water of less than 1% by weight and which were considered "*substantially insoluble*" in document (4). Hence, there would be no difference between the patented subject-matter and the peracid suspensions of the prior art disclosed in this citation.

Moreover, these suspensions of the prior art were explicitly disclosed in document (4) to display excellent chemical and physical stability and, thus, were necessarily stable in respect of their viscosity too. Hence, the skilled person searching for further viscous and stable disinfectants based on peracids, i.e. searching for an alternative to the viscous suspensions of particulate peracids disclosed in document (4), would have expected that the same ingredients which had

already been used to produce the stable and viscous suspensions of partially dissolved peracids according to this citation, could as well be used for preparing stable compositions wherein the peracids were completely dissolved, thereby arriving at the subject-matter claimed in the patent in suit without exercising any inventive skill.

The same reasoning applied also in respect of the subject-matter of the Respondent's auxiliary request, since the fact that this latter was limited to compositions and processes wherein the soluble peracid had to be aliphatic and comprised up to 6 carbon atoms, would result in no distinction in respect of the substantially water insoluble peracids of document (4) and which were described to have "*at least **about** 7 carbon atoms*" (emphasis added by the Board) at page 2, lines 48 to 50, of this citation.

VIII. The Respondent conceded at the oral proceedings before the Board the existence of an overlap between the group of compounds labelled as "*soluble peracid*" in the patent in suit and those considered "*substantially water insoluble*" in document (4) and did not dispute that the wording of claim 1 as granted would also allow the additional presence of undissolved peracid in the patented compositions. Nevertheless, it maintained that claim 1 of the patent in suit should be interpreted as defining exclusively compositions comprising completely dissolved peracid.

This applied all the more to the independent claims of the auxiliary request wherein the peracid ingredient had been limited to aliphatic peracids with up to 6

carbon atoms, i.e. to peracids which were completely "soluble" in water.

Moreover, no indication was to be found in document (4) that in these compositions of the prior art the stability upon storage of the suspension would also necessarily imply a similar stability in viscosity.

- IX. The Appellant requested that the decision under appeal be set aside and that the European patent No. 0 799 298 be revoked.

- X. The Respondent requested that the appeal be dismissed (main request) or auxiliary that the patent be maintained on the basis of the claims 1 to 26 as filed during oral proceedings.

Reasons for the Decision

Patent as granted (Main request)

- 1. *Inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC): claim 1*

- 1.1 The Appellant, after having opposed the patent in suit under Article 100(a) EPC only on the ground that the claims lack an inventive step (Article 56 EPC), has argued at the oral proceedings before the Board that no difference would be present between the subject-matter claimed in the patent in suit and the prior art disclosed in document (4).

The Enlarged Board of Appeal the EPO has decided (see the order of G 7/95, OJ 1996, 626) that when a patent has only been opposed under Article 100(a) EPC on the ground that the claims lacked an inventive step in view of documents cited in the notice of opposition, to dispute novelty vis-à-vis the said documents is a fresh ground for opposition that cannot be allowed in the appeal proceedings without the agreement of the patentee. However, the allegation that the claims lack novelty can be considered in the context of deciding on the ground of lack of inventive step.

Hence, in the present case the assessment of inventive step requires to establish whether or not the subject-matter of the granted claims was already known in the prior art disclosed in document (4) and, thus, obvious for the skilled person.

- 1.2 Claim 1 as granted defines a thickened aqueous composition comprising a soluble peracid in solution, AAE and a surfactant.
- 1.3 The Board notes initially that the wording used in this claim does **not** require *per se* that the peracid ingredient must be completely dissolved in the claimed composition, but only the presence of some "*soluble peracid*" dissolved in the aqueous phase (see in claim 1 "... **comprising** a soluble peracid in solution ...", emphasis added).

On the other hand, the skilled person, who would interpret the claim in the context of the whole patent disclosure, would **not** find in the patent description any reason excluding the possible presence of solid

(undissolved) peracid in addition to the dissolved one. Instead, the fact that the patent mentions explicitly among the examples of "*soluble*" peracid ingredients also MPA (see paragraph 14 of the patent in suit), i.e. a "*substantially insoluble*" peracid (see document (4) (see document (4), formula at page 3, lines 10 to 12, in combination with page 2, lines 48 to 50) confirms that in the claimed compositions the peracid ingredients may also be only partially dissolved.

At the oral proceedings before the Board none of the parties has finally disputed this interpretation of the claim. Hence, the Board concludes that the compositions according to claim 1 may also comprise undissolved peracid in addition to the dissolved one.

- 1.4 Nevertheless, the Respondent has maintained that the claimed thickened compositions would differ from those disclosed in document (4) in that the peracid would be completely dissolved in the former but substantially undissolved in the latter.

The Board finds, however, this argument manifestly inconsistent with the above conclusion on the interpretation of granted claim 1 and, thus, not convincing.

- 1.5 The Board notes also that the compositions disclosed in document (4) also comprise (in addition to the peracid at least partially dissolved in water such as MPA) ethoxylated fatty alcohols and secondary alkane sulphonate surfactants (see e.g. the claims 1 and 4 and the description at page 3, lines 42 to 43 and 46 to 47), i.e. ingredients respectively falling under the generic

definitions given for ingredients "(a)" and "(b)" in present claim 1.

This has not been disputed by the Respondent.

Hence, the Board finds that the prior art compositions disclosed document (4) already display all the technical features of the invention defined in claim 1 of the patent in suit.

- 1.6 Since the subject-matter of claim 1 of the patent as granted was already known in the prior art, the Board concludes that it was not new and, therefore, obvious. Hence, the patent as granted does not comply with the requirements of Article 56 EPC.

Auxiliary request

2. *Admissibility of the amendments in view of Rule 57a and Articles 84, 123(2) and (3) EPC*

- 2.1 The Board notes that claims 1 and 2 of this request differ from the corresponding claims as granted only in that the peracid ingredient has been limited to the aliphatic peracids with up to 6 carbon atoms (see above point VI).

The wording used to amend these claims is unambiguous and supported by the disclosure at page 5, lines 3 to 5, of the patent application as filed. Since the Appellant has raised no objection in these respects, no further details need to be given.

2.2 Accordingly, the Board finds that the amended claims of the auxiliary request comply with the requirements of Articles 84 and 123(2) and (3) EPC as well as with Rule 57a EPC.

3. *Inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC): claim 1*

3.1 This claim defines aqueous thickened disinfectant compositions based on an aliphatic peracid with up to 6 carbon atoms dissolved in the aqueous phase, AAE and surfactants.

3.2 It is undisputed that also the suspensions disclosed in document (4) (see claims and examples) are viscous disinfectant compositions based on peracids, AAE and surfactants. Instead, the solutions disclosed in document (3) (see claim 1) contain neither AAE nor other thickeners.

Hence, the Board concurs with the Appellant that the prior art disclosed in document (4) represents a reasonable starting point for the assessment of inventive step.

3.3 The Appellant has maintained that at least the aliphatic peracids with 6 carbon atoms according to claim 1 would also be encompassed in the group of "*substantially water insoluble*" peracids disclosed at page 2, lines 48 to 50, of document (4) to have "*at least **about** 7 carbon atoms*" (emphasis added).

The Board observes instead that the used expression "*about 7*" is intrinsically ambiguous and does not

equate *per se* to a clear disclosure of the value "6". Moreover, the peracids of document (4) are also precisely defined by means of a general formula requiring 7 or more carbon atoms (see from page 2, line 51 to page 3, line 1). Hence, document (4) identifies clearly in "7" the minimum number of carbon atoms of the "*substantially water insoluble*" peracids.

This fact implicitly confirms that, as argued by the Respondent, all the peracid ingredients of the presently claimed compositions - i.e. the aliphatic peracids with up to 6 carbon atoms - are instead substantially "*soluble*" in water. This is also consistent with the common general knowledge of the chemistry practitioner that these low molecular weight aliphatic peracids are liquid and miscible at any ratio with water.

Hence, it is apparent to the skilled person that the presently claimed compositions differ from those disclosed in document (4) not only in the number of carbon atoms of the peracid ingredients, but also in the fact that these peracids are substantially dissolved in the aqueous phase and not simply suspended therein.

- 3.4 The Respondent has argued that the physical stability of the suspensions disclosed in document (4) would refer exclusively to the absence of precipitation of the particulate peracid contained therein, but would not necessarily demand constancy of the viscosity as well. Hence, in the opinion of the Respondent this citation provided no information on the level of

stability upon storage of the viscosity in these prior art compositions.

- 3.4.1 The Board observes instead that, as correctly pointed out by the Appellant too, the expression "*chemical and physical stability*" used at page 4, lines 12 to 14, or 33 to 34 of document (4) must reasonably make reference to the chemical and physical stability **in general** of the peracid suspensions disclosed in this citation. Indeed, this expression is normally used to indicate the general stability of the chemical and physical state of a composition of matter and, thus, also of **all** the measurable chemical and physical properties of such composition. It is for this very reason that exactly the same expression has also been used e.g. in paragraph 13 of the patent in suit as a general expression indicating, in particular, stability of the viscosity and of the peracid ingredient in the composition of the invention.

Hence, in the absence of any evidence to the contrary, document (4) indicates to the skilled person the "*chemical and physical stability*" in general of these prior art suspensions and, thus, also of their viscosity.

- 3.4.2 For the above reasons, the Board concludes that both the claimed compositions and those of the prior art disclosed in document (4) are physically and chemically stable under any respect, including in their viscosity.

Therefore, the Board concurs with the Appellant that the technical problem credibly solved by the claimed subject-matter vis-à-vis this prior art is that of

providing further viscous and stable disinfectants based on peracids, i.e. an alternative to the viscous suspensions of particulate peracids disclosed in document (4).

3.5 In view of the existing technical problem of providing an alternative, the assessment of inventive step boils down to establishing whether or not the skilled person would have expected that further viscous disinfectant compositions that are chemically and physically stable upon storage could be obtained by replacing the peracids with at least 7 carbon atoms suspended in the viscous disinfectant compositions disclosed in document (4) with aliphatic peracids with up to 6 carbon atoms dissolved in the water phase.

3.6 The Board observes that, although solutions of aliphatic peracids with less than 6 carbon atoms had already been used for producing disinfecting compositions (e.g. in document (3)), still - as evident from both the patent (see paragraph 5) and from document (3) (see page 1, lines 10 to 24, page 4, lines 28 to 29, and from page 5, lines 22 to page 6, line 2) - their stability was also known to the skilled person to be problematic and to require an accurate selection of the other ingredients in order to avoid degradation of the very reactive peracid. Actually, disinfectant compositions based on suspensions of peracid particulates have been developed precisely with the aim of overcoming the insufficient stability of the already known peracid solutions, since the separation in different physical states of the peracid and of the other potentially interacting chemical species clearly aims at minimising the interaction between the peracid

and the chemical species present in solution (see paragraph 6 of the patent in suit and page 2, lines 8 to 17 of document (4)).

The Appellant has never disputed the existence of this common general knowledge, as resumed in the patent in suit and confirmed in documents (3) and (4).

Under these circumstances, the Board concludes that the skilled person would necessarily expect that the replacement of the substantially insoluble peracid in the compositions of document (4) by a more soluble one would normally produce a **decreased** chemical stability in respect of the peracid ingredient in the disinfecting composition.

Hence, the presently claimed compositions represent a non-obvious solution to the existing technical problem.

3.7 Therefore, the Board finds that the subject-matter of claim 1 is based on an inventive step and, thus, complies with the requirements of Article 56 EPC.

4. *Inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC): claims 2 to 26*

The reasoning given above in respect of the thickening composition of claim 1 applies also the process for thickening solutions of soluble aliphatic peracids with up to 6 carbon atoms as defined in claim 2, as well as, to the preferred embodiments of this composition and/or process as defined in claims 2 to 25 and to the method for using this thickening composition as claimed in claim 26.

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 in amended form with claims 1 to 26 as filed during oral proceedings and a description to be adapted thereto.

The Registrar:

The Chairman:

G. Rauh

P. Krasa