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**Datasheet for the decision
of 21 May 2014**

Case Number: T 0869/12 - 3.3.06

Application Number: 07766282.3

Publication Number: 1948769

IPC: C11D1/835, C11D3/02, C11D3/20,
C11D3/22, C11D17/00

Language of the proceedings: EN

Title of invention:
Improved hard surface cleaning compositions

Patent Proprietor:
Reckitt Benckiser (UK) Limited

Opponent:
Akzo Nobel N.V.

Headword:
Superwetter surfactant / RECKITT

Relevant legal provisions:
EPC Art. 52(1), 56

Keyword:
Inventive step - (no)

Decisions cited:
T 0190/03, T 0892/08

Catchword:



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Case Number: T 0869/12 - 3.3.06

**D E C I S I O N
of Technical Board of Appeal 3.3.06
of 21 May 2014**

Appellant:
(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 16 February
2012 revoking European patent No. 1948769
pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman B. Czech
Members: L. Li Voti
U. Lokys

Summary of Facts and Submissions

- I. The present appeal is from the decision of the Opposition Division to revoke European patent no. 1 948 769.
- II. Claim 1 of the patent as granted reads as follows:
- "1. A largely aqueous, thickened, acidic composition which exhibits a pH of 4 or less, which comprises an acid, a thickening constituent or constituents which form a thickener system, at least one deterative surfactant and at least one superwetter surfactant which is based on a narrow range ethoxylated alcohol nonionic surfactant having two cloud points, which is a C₉-C₁₁ nonionic surfactant with approx. 5.5 mols ethoxylation and with an HLB value of about 12 - 12.4; and exhibits two cloud points when dispersed or dissolved at a 1% concentration in water, one at 24 - 29°C and a second at 55 - 58°C."*
- III. In its notice of opposition the Opponent had sought revocation of the patent *inter alia* on the ground of lack of inventive step (Article 100(a) EPC).
- The documents cited in support of the opposition include the following:
- D3: GB 2 341 870 A and
- D4: "Household, Institutional & Industrial Cleaners", Publication SC02-02 by Akzo Nobel Surface Chemistry LLC, © 2002.
- IV. In the decision under appeal, the Opposition Division found *inter alia* that the subject-matter of granted

claim 1 did not involve an inventive step in the light of the combination of documents D3 and D4.

In particular, the Opposition Division saw no reason to doubt the veracity of the statement contained in the patent in suit according to which a thickened, acidic cleaning composition including Berol[®] 266, a nonionic superwetter surfactant of the type stipulated by claim 1 as granted, provided improved surface coverage and reduced fingering of the interior sidewall of a toilet bowl treated therewith, as compared to compositions not containing said nonionic superwetter surfactant.

However, the Opposition Division considered that the comparative compositions alluded to in the patent in suit were more remote from the claimed subject-matter than the composition of example E1 of document D3, which composition also contained a nonylphenol-ethoxylate as nonionic surfactant.

Since the alleged advantages of improved surface coverage and reduced fingering had not been convincingly proven over the closest prior art, the Opposition Division took the view that the objective technical problem underlying the invention had to be reduced to be the provision of a further thickened acidic hard surface and toilet cleaning composition.

The Opposition Division concluded that the skilled person, faced with this technical problem, would consider the disclosure of document D4. In the absence of any disincentive to do so, the skilled person could and would use the known Berol[®] 266 nonionic superwetter surfactant of document D4 in compositions as disclosed in document D3.

- V. With his statement setting out the grounds of appeal, the Appellant (Patent Proprietor) filed an experimental report and submitted that the claimed subject-matter was inventive over the cited prior art.
- VI. In his reply of 5 October 2012, the Respondent (Opponent) contested the conclusiveness of the experimental report submitted by the Appellant and maintained *inter alia* that the claimed subject-matter lacked inventive step.
- VII. Oral proceedings were held before the Board on 21 May 2014. The debate focused on the issue of inventive step in the light of the combination of documents D3 and D4, considering also the newly filed experimental report.
- VIII. The Appellant requested that the decision under appeal be set aside and that the opposition be rejected.
- The Respondent requested that the appeal be dismissed.
- IX. The arguments of the parties of relevance here can be summarised as follows:

As regards inventive step the Appellant argued that

- the technical problem underlying the claimed invention, starting from the composition of example E1 of document D3, consisted in the provision of a thickened acidic hard surface and toilet cleaning composition providing improved surface coverage properties and reduced fingering;
- the experimental report submitted with the statement of the grounds of appeal clearly showed that a

composition according to granted claim 1, corresponding to that of example 3 of the patent in suit, provided better surface coverage and less fingering on the inner wall of a toilet bowl treated therewith than the composition E1 of document D3; moreover, it was clear from the newly filed experimental report that the achieved technical advantage was due to the presence of the nonionic superwetter surfactant required in claim 1 as granted; therefore, the technical problem posed had been convincingly solved by means of a composition as claimed;

- since neither document D3 nor document D4 contained any suggestion that the above mentioned technical advantages could be achieved by using a nonionic superwetter surfactant as defined in claim 1 as granted, the claimed subject-matter involved an inventive step;

- moreover, even in the case the newly filed experimental report were considered non-conclusive as regards the achievement of the alleged technical advantages and that the technical problem underlying the invention were considered to merely consist in the provision of a further thickened acidic hard surface and toilet cleaning composition, the claimed subject-matter would still be inventive;

- document D3 taught to use as nonionic surfactant, preferably, a nonylphenoethoxylate or a secondary alcohol ethoxylate but not a linear alcohol ethoxylate like the superwetter surfactant of granted claim 1; therefore, the skilled person would neither have replaced the nonylphenoethoxylate of example E1 of document D3 with the linear nonionic superwetter surfactant Berol[®] 266 disclosed in document D4, nor

would he have added this particular surfactant to the formulation of example E1;

- furthermore, even if the skilled person would have considered the possibility of adding one of the linear nonionic surfactants disclosed in document D4 to the composition of example E1 of document D3, he would not have had any reason for selecting the specific superwetter surfactant Berol[®] 266 rather than one of other types of surfactants presented in D4 as being equally suitable for use in acidic hard surface cleaners or even especially suitable for use in thickened compositions.

The Respondent submitted in essence that

- the experimental report submitted by the Appellant was not apt to demonstrate the alleged technical improvements, *inter alia* because the compositions tested and compared differed from each other in too many aspects, including the nature of the components used and the quantities of similar components; therefore, it was not possible to gather from this report that any technical advantage would derive from the only distinguishing feature of the claimed subject-matter, i.e. the presence of the specific nonionic superwetter surfactant;

- the technical problem underlying the claimed invention could thus only be formulated like in the decision under appeal, i.e. it consisted in the provision of a further thickened acidic hard surface and toilet cleaning composition;

- the skilled person, starting from the composition of example E1 of document D3, which differed from the

claimed subject-matter only in the absence of the nonionic superwetter surfactant, would have learnt from the description of document D3 that other nonionic surfactants such as linear alcohol ethoxylates could also be used in the preferred compositions, as shown, for example, in example E9;

- therefore, it would have been obvious for the skilled person to modify the composition of example E1 by adding any known linear alcohol ethoxylate suitable for use in an acidic hard surface cleaning composition;

- D4 expressly indicated that the nonionic superwetter surfactant Berol[®] 266 was a surfactant suitable for being used in acidic hard surface cleaning compositions; therefore, it was obvious for the skilled person to try incorporating this surfactant into a composition according to example E1 of document D3;

- hence, the subject-matter of claim 1 as granted thus lacked an inventive step.

Reasons for the Decision

Admissibility of newly filed experimental report

1. The Appellant filed an experimental report together with its statement of grounds of appeal.
- 1.1 The filing of this experimental report merely constitutes another attempt of the Appellant to corroborate its position that the claimed subject-matter was indeed improved, compared to the composition according to the closest prior art. It was filed in reaction to the reasons given by the Opposition

Division, which did not accept that said improvement had been proven. The adverse party did not object to the late filing of said experimental report.

- 1.2 Hence, the Board decided to admit this experimental report into the proceedings (Article 114(2) EPC and 12(2), (4) RPBA)

Inventive step - Claim 1 as granted

2. The invention

- 2.1 The present invention (see paragraph [0001] and claim 1 of the patent in suit) relates *inter alia* to compositions for cleaning, and optionally disinfecting or sanitising, hard surfaces, which are particularly adapted to clean lavatory appliances, particularly toilets and the like.

- 2.2 As regards the background of and the issues dealt with by the invention, the description of the patent in suit (paragraph [0002]) explains, in particular as regards the use of viscous cleaning compositions which are applied from a squeeze bottle on an inclined surface such as the interior of a toilet bowl, that *"it is almost universally observed that as the layer, or lamina of applied liquid slowly descends towards the bottom of the interior of the toilet bowl, the lamina almost always separates into a plurality of discrete downwardly extending regions of the cleaning composition, referred to as "fingers", which once formed form channels through which the applied compositions prefer to flow downwardly. These fingers also define zones or regions of the interior surface of the toilet bowl which are intermediate adjacent fingers which is uncoated by the cleaning composition and thus*

remains untreated. In order to ensure good coverage, either reapplication of a further amount of the cleaning composition and/or user intervention, e.g., the use of a toilet brush in order to physically spread the cleaning composition to the uncoated zones or regions is required."

Accordingly, the invention is concerned with the avoidance of such additional cleaning steps. Therefore, the description (paragraphs [0004] and [0006]) indicates that it is amongst the objects of the invention *"to provide improved cleaning compositions which provide the benefits of good cleaning to a treated hard surface, and especially to provide feature improved surface coverage when applied from a container, especially a squeeze bottle, onto a vertical or inclined hard surface"*, said compositions providing upon use *"an improved delivery and/or cleaning benefit"*.

3. Closest prior art

3.1 Document D3 addresses similar issues and discloses similar cleaning compositions. Hence, for the Board, document D3 and, in particular, the composition described in example E1 thereof, constitutes the closest prior art for the evaluation of inventive step. This was also common ground between the parties during oral proceedings.

3.2 More particularly, document D3 (see claim 1; page 1, lines 6 to 8; page 2, lines 8 to 10; page 15, lines 21 to 27), like the patent in suit, discloses thickened, aqueous and acidic compositions for cleaning and disinfecting hard surfaces of e.g. lavatory fixtures, and especially of toilets and bidets. The latter

usually have inclined or vertical surfaces to be cleaned.

- 3.3 The composition of example E1 (D3: page 16, lines 9 to 10 and page 17, table 1A) is a representative example thereof. This composition has a pH of 4 and comprises, by weight, 0.5% of a deterative nonylphenoethoxylate (nonionic surfactant), 2.5% of formic acid (94%), 1.5% of quaternary ammonium chloride surfactants (80% in water/ethanol; see Table 2A of D3) having deterative and disinfecting properties (as acknowledged in paragraphs [0044] to [0047] of the patent in suit), 0.5% hydroxyethyl cellulose (a thickening constituent), 0.35% fragrance and dye and water to 100%.

4. Technical problem allegedly solved

At the oral proceedings, the Appellant maintained that, in the light of D3/Example E1, the technical problem consisted in the provision of a further thickened acidic hard surface and toilet cleaning composition providing improved surface coverage properties and reduced fingering.

5. Solution

As the solution to the technical problem posed, the patent in suit proposes the composition according to claim 1 as granted, i.e. a *"largely aqueous, thickened, acidic composition which exhibits a pH of 4 or less" and "which comprises an acid, a thickening constituent ..., at least one deterative surfactant"* and is characterised more particularly in that it also comprises *"at least one superwetter surfactant which is based on a narrow range ethoxylated alcohol nonionic surfactant having two cloud points, which is a C₉-C₁₁*

nonionic surfactant with approx. 5.5 mols ethoxylation and with an HLB value of about 12 - 12.4; and exhibits two cloud points when dispersed or dissolved at a 1% concentration in water, one at 24 - 29°C and a second at 55 - 58°C."

6. Alleged success of the solution

6.1 The Appellant did not contest that the composition of example E1 of document D3 exhibited good cleaning on hard surfaces of lavatory fixtures and, in particular, of inclined surfaces such as the inner wall of a toilet bowl. However, it held that in the context of the latter use, the claimed compositions provided an improvement in terms of increased surface coverage and reduced fingering which was attributable to the replacement of the nonionic surfactant used in the composition described in D3/example E1 with at least one so-called superwetter surfactant as defined in claim 1 or to the addition of such a nonionic superwetter surfactant to a composition as described in said example E1.

6.2 From the patent in suit itself (paragraph [0121]), it can be gathered that each of the compositions of examples 3 to 8, when applied from a deformable plastic bottle through a nozzle onto the side walls of a toilet bowl, *"exhibited excellent transverse spreading of the lamina of the composition as it was applied to the interior curved surface of toilet bowls, such that the formation of..."fingers"..."was substantially reduced."*

6.2.1 However, the patent in suit does not contain any comparative example supposed to represent previously known compositions for the same purpose. Therefore, it is not apparent with respect to which specific kind of

composition the above mentioned examples of the invention are supposed to show reduced "fingering".

6.2.2 More particularly, since document D3 was not acknowledged in the application as filed, the examples of the patent in suit cannot be relied upon to show any improvement whatsoever, let alone as regards fingering, with respect to the use of a composition according to example E1 of document D3, representing the closest prior art.

6.3 The experimental report submitted by the Appellant with the statement of grounds of appeal (pages 2 to 4 of the latter) comprises a comparison of two compositions, labelled 2009 (composition in accordance with the invention) and 1999 (composition according to example E1 of D3), respectively, in terms of the surface coverage achieved when applying the compositions to a toilet bowl.

6.3.1 Composition 2009 contains, by weight, 0.3% Linear Alcohol Alkoxylated Nonionic Surfactant, 0.1% of BEROL 266 (the nonionic superwetter surfactant), 2.04% of Sodium Hydroxide (50%), 1.29% of Formic Acid (85%), 1.00% Citric Acid Anhydrous, 0.45% Hydroethylcellulose, 0.36% Benzalkonium Chloride (80%), 0.21% Fragrance, 0.003% Colourant and Water to 100%.

Composition 1999, supposed to correspond to that of example E1 of D3, comprises, by weight, 0.5% Nonylphenoethoxylate (a nonionic surfactant), 2.5% Formic acid (94%), 1.50% Quaternary Ammonium Chloride (80%) (allegedly a mixture of alkyl dimethyl benzyl ammonium chloride, octyl-decyl-, dioctyl- and didecyl-dimethyl ammonium chlorides containing 10% by weight ethanol and 10% by weight Water in accordance with D3,

page 18, table 2A), 0.50% Hydroxyethylcellulose, 0.35% Fragrance and Colourant and Water to 100%.

- 6.3.2 From a comparison of compositions 2009 and 1999, it is immediately apparent that they differ considerably from each other in terms of the components used and their relative amounts:

Whereas composition 2009 contains a Linear Alcohol Alkoxylated Nonionic Surfactant which is not further specified in the table, the nonionic superwetter surfactant BEROL 266, Sodium Hydroxide and Citric Acid Anhydrous, which components are not contained in composition 1999, said composition 1999 contains a nonylphenoethoxylate, a Quaternary Ammonium Chloride (allegedly the mixture used in example E1 of D3 containing also octyl-decyl-, dioctyl- and didecyl-dimethyl ammonium chlorides and ethanol), which components are not contained in composition 2009.

Moreover, those components which are present in both compositions are contained in different amounts: For instance, composition 2009 contains 1.29% of Formic Acid (85%), i.e. 1.1% of Formic Acid, 0.45% of Hydroxyethylcellulose and about 95.5% water, whilst composition 1999 contains 2.50% of Formic Acid (94%), i.e. 2.35% of Formic Acid, 0.50% of Hydroxyethylcellulose and about 95% Water. Furthermore, composition 2009 contains 0.4% of nonionic surfactants (0.3% Linear Alcohol Alkoxylated Nonionic Surfactant + 0.1% BEROL 266) and 0.29% of quaternary surfactants (0.36% Benzalkonium Chloride (80%)) whilst composition 1999 contains 0.5% of Nonylphenoethoxylate as the only nonionic surfactant and 1.20% of quaternary surfactants (1.50% Quaternary Ammonium Chloride (80%)).

6.3.3 Because of the several differences existing between the tested compositions, the newly filed experimental report is not, in the Board's judgement, apt to convincingly establish that an improvement in terms of surface coverage would be brought about by the mere addition of the nonionic superwetter surfactant BEROL[®] 266 to the composition E1 of document D3 or by the mere replacement of the nonylphenoethoxylate of example E1 with the nonionic superwetter surfactant BEROL[®] 266. Whether the data presented in the Appellant's experimental report regarding the resulting "Coverage (%)" actually show a better performance of composition 2009 need thus not to be decided.

For these reasons the Board finds that the experimental report submitted by the Appellant does not convincingly prove the achievement of the alleged technical advantages over the composition according to the closest prior art.

6.3.4 For the sake of completeness the Board remarks that the statement contained in the description of the patent in suit (paragraph [0052]) that it was "*surprisingly discovered that the inclusion of even a small but effective amount of this nonionic surfactant (the nonionic superwetter) provides improved surface coverage when the compositions are applied from a container, especially from a squeeze bottle onto a vertical or inclined hard surface, as compared to like compositions which omit this constituent but which are applied in an identical manner*"

- neither specifies whether the alluded comparative compositions also contain ethoxylated nonionic surfactants like the composition according to the closest prior art, as already recognised in the decision under appeal, page 8, second full paragraph,

this finding not being contested by the Appellant,
- nor contains any indication that the alleged improvements can be achieved by adding the specific superwetter surfactant to a composition containing the nonionic nonylphenolethoxylate of example E1 of document D3.

6.4 Consequently, the Board is not convinced that the technical problem identified by the Appellant in the light of D3/example E1 as the closest prior art (point 4 above) is indeed effectively solved by means of compositions according to granted claim 1.

7. Reformulation of the technical problem

For this reason the technical problem must be reformulated in a less ambitious manner. It can be seen in the mere provision of a further aqueous, thickened and acidic hard surface and toilet cleaning composition.

8. Success of the solution

Not least in view of the experimental results reported in the patent in suit and of the newly filed experimental report filed by the Appellant, the Board accepts as plausible, that this less ambitious problem is effectively solved by compositions according to claim 1 as granted. This was also not disputed by the Respondent.

9. Obviousness

9.1 It remains to be assessed whether the claimed solution to the technical problem posed was obvious in the light of the state of the art.

9.2 Document D3

9.2.1 It was not disputed by the Appellant that the composition according to claim 1 as granted differs from the composition according to D3/example E1 only insofar as the former must contain the specific nonionic superwetter surfactant defined therein. Hence, it must be assessed whether the incorporation of such a superwetter component into a composition according to example E1 of D3, for instance by adding it to the latter, was an obvious solution to the posed technical problem.

9.2.2 According to the teaching of document D3 (page 4, lines 6 to 11 and 18 to 20) "*Exemplary useful nonionic surfactants include condensation products of alkylene oxide groups with an organic hydrophobic compound, such as an aliphatic or alkyl aromatic compound. Further exemplary useful nonionic surfactants include ... alkylated polyoxyethylene phenols, polyoxyethylene ethers of long chain aliphatic alcohols ... Preferred nonionic surfactants include known compounds which may be formed by condensation of an aliphatic or alkyl aromatic compound, with sufficient ethylene oxide to produce a compound having a polyoxyethylene.*"

Therefore, even though the subsequent following paragraphs of D3 (page 4, lines 21 to 22 and 26) indicate that ethoxylates of secondary alcohols and of alkylphenols are particularly preferred nonionic surfactants, the skilled person would have had no particular reason, in the light of the indications in the above mentioned passage of D3, to exclude the use of ethoxylates of linear alcohols as a nonionic surfactant component that may be combined with other

preferred surfactants within a composition according to D3.

This finding is corroborated by example E9 of document D3 (see Tables 1B and 2B), describing another preferred aqueous thickened acidic composition containing an anionic surfactant (sodium alkyl benzene sulfonate) in combination with an alcohol ethoxylate which is a linear C₁₂-C₁₆ alcohol ethoxylate with an average of 7.3 ethylene oxide groups per molecule, supplied as GENAPOL 26-L-60, as nonionic surfactant component.

9.2.3 The Board thus concludes that the skilled person, starting out from D3/example E1 and trying to provide a further composition with similar properties would have seriously considered the possibility of adding to the former a linear alcohol ethoxylate as additional deterative nonionic surfactant component, in particular linear alcohol ethoxylate surfactants known to be suitable for being used in an acidic hard surface cleaner.

9.3 Combination of document D3 with document D4

9.3.1 D4 discloses (see description under heading "Ethoxylation" and Table "Alcohol Ethoxylates Narrow Range" on page 1) nonionic C₉₋₁₁ "narrow range" alcohol ethoxylate surfactants of the Berol[®] series, such as BEROL[®] 266. The latter is a linear surfactant falling under the definition of the "*superwetter surfactant*" according to granted claim 1, as acknowledged in paragraph [0052] of the patent in suit and not disputed by the Appellant. In said table of D4 "**hard surface** and all purpose cleaners" are expressly indicated as being "main applications" of Berol[®] 266. On the same page of D4, under the heading "Efficiency", it is indicated

that these surfactants provide "faster soil penetration, improved cleaning and lower foam". The suitability of BEROL[®] 266 for the purpose of hard surface and toilet bowl cleaning is also readily apparent from the properties (e.g. cleaning efficiency, chemical stability) of this product reported in the table on the last page of document D4.

- 9.3.2 As emphasised by the Appellant, document D4 (see tables on page 1 and on the last page) also discloses other nonionic surfactants suitable for being used in acidic hard surface cleaners, such as BEROL[®] 260 and BEROL[®] 840, and it discloses (see table on page 9) surfactants or surfactant mixtures which are rheology modifiers suitable for being used in thickened acidic cleaners.

However, the Board remarks that D4 does not contain any information potentially inducing the skilled person to disregard the explicit indication concerning the suitability of the superwetter surfactant BEROL[®] 266 for being incorporated as linear nonionic surfactant into an acidic hard surface cleaner composition.

- 9.4 The Board thus concludes, that the incorporation of some of the linear superwetter surfactant BEROL[®] 266 into a composition as described in example E1 of document D3 was one of several possibilities from which the skilled person following the teaching of document D3 could choose when seeking to provide a further, not necessarily better, aqueous, acidic and thickened cleaning composition for cleaning hard surfaces of e.g. toilet bowls (see also point 9.2.3 above). By opting for the incorporation of Berol[®] 266, the skilled person would thus arrive at a composition falling within the terms of claim 1 without inventive ingenuity (see e.g.

decisions T 0190/03 of 29 March 2006, point 14 of the reasons, and T 0892/08, point 1.7 of the reasons).

9.5 Therefore, in the Board's judgement, the subject-matter of claim 1 as granted does not involve an inventive step (Articles 52(1) and 56 EPC).

10. Hence, the Appellant's sole request is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

B. Czech

Decision electronically authenticated