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Datasheet for the decision of 18 March 2014

Case Number: T 1182/11 - 3.3.06

Application Number: 06124062.8

Publication Number: 1927651

IPC: C11D1/825, C11D3/20, C11D3/36, C11D3/37, C11D3/43, C11D17/04

Language of the proceedings: EN

Title of invention:
Liquid hard surface cleaning compositions

Applicant:
The Procter & Gamble Company

Headword:
Hard surface cleaning composition / P&G

Relevant legal provisions:
EPC Art. 52(1), 123(2), 56

Keyword:
Amendments - allowable (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

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Case Number: T 1182/11 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 18 March 2014

Appellant: (Applicant)	The Procter & Gamble Company One Procter & Gamble Plaza Cincinnati, OH 45202 (US)
Representative:	Vercruysse, Nicolas NV Procter & Gamble Services Company SA Temselaan 100 1853 Strombeek-Bever (BE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 13 December 2010 refusing European patent application No. 06124062.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: B. Czech
Members: G. Santavicca
U. Lokys

Summary of Facts and Submissions

I. The appeal lies from the decision of the examination division to refuse European patent application n° 06124062.8.

II. Claim 1 according to the claim request decided upon in the decision under appeal reads as follows (amendments to claim 1 of the application as filed made apparent by the Board):

"*1. A liquid **cleaning** composition having, a pH between 3 and 7, comprising:*

a) non ionic surfactant or mixture thereof,

b) an amine oxide or a mixture thereof,

c) a glycol ether solvent,

d) a chelant,

e) a cationic polymer,

*characterize**d** in that the composition is free of anionic surfactant.*".

III. In the decision under appeal, it was *inter alia* held that:

a) The amended claims fulfilled the requirements of Article 123(2) EPC.

b) Since none of of the prior art documents

Da: EP 0 875 552 A1,

Db: WO 01/31110 A1,

Dc: GB 2 340 501 A,

Dd: US 4 587 030 A,

De: EP 1 362 907 A2,

Df: DE 195 45 630 A1,

Dg: WO 2005/100523 A1,

Dh: EP 0 342 997 A2 or

Di: EP 0 017 149 A1

disclosed a composition with all the features of

Claim 1 at issue, the claimed subject-matter was novel.

c) The closest prior art was disclosed in any of Dc and Dd, which both related to acidic hard surface cleaning compositions for the removal of hard water residue and soap scum. According to Dd, also the foaming was improved.

d) The composition according to Claim 1 was distinguished over the compositions of Dc or Dd by the presence of a cationic polymer.

e) The effects shown in the application were not surprising.

f) Also, the use of a cationic polymer for cleaning delicate hard surfaces was known, e.g. from De (which disclosed that use of cationic polymers provided enhanced, i.e. easier next time cleaning, i.e. in terms of soap scum removal) and Df (which disclosed that cationic polymers increased cleaning performance by repeated use), both De and Df dealing with acidic compositions.

g) Thus, a skilled person starting from Dc or Dd and combining any of them with De or Df would thereby obviously arrive at the claimed subject-matter.

h) In an *obiter dictum* concerning the comparative examples filed with letter dated 15 October 2010 it was held that although the comparison was not perfect it showed an unexpectedly improved cleaning and less surface damage compared to the compositions of Da.

IV. With its statement setting out the grounds of appeal, the appellant *inter alia* filed a set of amended Claims 1 to 16 as main request and submitted new items of evidence in form of comparative examples allegedly showing that a composition A according to the invention leads to improved cleaning and improved surface safety

compared to Compositions VII, IX and XII of Da, to those of Examples 1 and 4 of Dc and to those of Examples 2, 3 and 4 of Dd.

V. In preparation for oral proceedings, the board issued a communication indicating its provisional view regarding some of the salient issues of the case. The Board indicated that Dc appeared to be the most appropriate starting point for the assessment of inventive step, but that document De also appeared to be of particular relevance in this respect.

VI. Oral proceedings were held on 18 March 2014. The debate essentially focussed on the issue of inventive step, in particular with regard to one of documents Dc or De taken as starting point.
Thereupon, the appellant submitted a new claims request replacing the previous main request filed with the statement setting out the grounds of appeal.

VII. Independent Claims 1, 13 and 16 according said new (sole) request read as follows (amendments to the respective claims of the application as filed being made apparent):

"*1. A liquid **cleaning** composition having~~,~~ a pH between 3 and 7~~,~~ comprising:*
a) non ionic surfactant or mixture thereof,
b) an amine oxide or a mixture thereof,
c) a glycol ether solvent,
d) a chelant,
e) a cationic polymer,
*characterize**d** in that the composition is free of anionic surfactant.*".

"*13. A process of treating a hard-surface characterize**d***

*~~in~~ **~~that~~** **by** applying a liquid **cleaning** composition according to any of the preceding claims onto said hard surface.*"

"*16~~18~~. The use of a composition ~~such~~ as defined in claim 1 to 12 to remove greasy scum of hard surfaces.*"

Dependent claims 2 to 12, 14 and 15 are directed to more specific embodiments of the composition and process of claims 1 and 13, respectively.

VIII. The appellant's arguments of relevance here can be summarised as follows:

Admissibility

a) The amended claim request filed during oral proceedings addressed objections raised by the Board. The claim request was thus admissible.

Amendments

b) The amendments made were clearly allowable.

Inventive step

c) Claim 1 contained a very important feature, which had been overlooked in the decision under appeal, namely that the pH of the composition had to lie in the range of from 3 to 7. This pH range indicated that the claimed composition was for cleaning and preserving delicate surfaces, i.e. that it was different from strongly acidic, compositions as disclosed e.g. by Dc. In fact, none of the documents cited disclosed compositions with pH greater than 3, because none of them

addressed the problem of preserving a delicate surface to be cleaned.

d) At the oral proceedings, the Appellant conceded that Dc was a good starting point for the assessment of inventive step. Dc addressed the issues of cleaning efficiency and second time cleaning benefits, but not, however, in connection with the cleaning of delicate surfaces, as its compositions should have a pH lower than 3, or even lower than 2. The closest composition disclosed by Dc was that of its Example 1, which had a pH of less than 3, contained glycol ether, nonionics, amine oxide and a cationic film forming compound and which was free of anionics.

e) The claimed composition was distinguished therefrom by three features, namely, a pH greater than 3, a film forming polymer and a chelant.

Problem solved

f) The comparative examples submitted with the statement setting out the grounds of appeal convincingly showed that the claimed composition did not damage the surface to be cleaned, *inter alia* because of its higher pH, whilst surprisingly providing the same or better cleaning effectiveness than compositions according to the closest prior art Dc. Hence, the problem solved was to provide compositions with comparable cleaning effects but being less damaging to delicate surfaces, i.e. with a good balance of cleaning efficiency/surface integrity preservation.

Non-obviousness

g) Dc contained no hints to modify the composition of Example 1 of Dc as regards the three distinguishing features (point e) *supra*). Even if the skilled person had considered increasing the pH to improve safety, he would not have found any hint on how to prevent the decrease in cleaning effectiveness to be expected. Dc contained no hint to add a chelant, let alone a film forming polymer. Indeed, Dc taught that its preferred compositions were chelant-free and that the film-forming cationic compound performed very well. Moreover, still according to Dc, known film forming polymers were not compatible with chelants and quaternary ammonium salts in acidic pHs. Thus, Dc dissuaded the skilled person from adding chelants and film forming polymers to acidic compositions as illustrated by Example 1. Therefore, the claimed composition was not obvious over Dc alone.

h) De disclosed compositions with a pH ranging from acidic to alkaline, but did not expressly address delicate surfaces either. No comparative technical data had been provided with regard to De. The three features distinguishing e.g. the composition of Example 10 of De from the composition according to claim 1 at issue were a pH value of greater than 3 and the presence of chelant and amine oxide. Although the use of chelant and amine oxide was not excluded, De did not contain any hint to add chelant and amine oxide to an acidic compositions.

i) The use of a chelant and/or a cationic film

forming polymer was not a generally known measure to compensate for the increase of the pH in a cleaning composition, nor were they known options disclosed in any of the cited documents. Hence, the claimed composition was not obvious, even if De were considered as the closest prior art.

j) The breadth of Claim 1 was justified because it defined a new family of compositions, which were less damaging (safer) when applied to delicate surfaces, whilst being similar if not better in cleaning effectiveness.

IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1-16 according to the request submitted during oral proceedings and a description to be adapted thereto.

Reasons for the Decision

1. The appeal is admissible.

Main request

Admissibility of the request

2. The claims according to the request at issue are identical to the claims according to the request refused by the examining division, except for some clerical amendments made at the oral proceedings in reaction to comments by the board.

The Board thus decided to admit the request despite its late filing (Articles 114(2) and 13(3) RPBA.

Amendments

3. Independent Claim 1 at issue differs from claim 1 of the application as filed in that the composition is more precisely defined as being a "*liquid* ***cleaning*** *composition*" (emphasis added).

3.1 The amendment consisting in the incorporation of the term "*cleaning* " finds a basis *inter alia* in the most general disclosure of the application as filed (first page, first paragraph, technical field).

3.2 The other amendments made to the claims of the application as originally filed are the deletion of some of them, as well as some merely clerical further changes.

3.3 Thus, the board is satisfied that amended claims at issue comply with the requirements of Article 123(2) EPC.

Clarity (Article 84 EPC)

4. The clarity objections raised in the communication issued in preparation for oral proceedings are overcome by the clerical changes made.

Thus, the Board is satisfied that the claims at issue are clear and thus meet the requirements of Article 84 EPC.

Novelty

5. In the decision under appeal, the claimed composition was held to be novel over the compositions disclosed by documents Da to Di.

The Board sees no reason for taking a different stance.

Features distinguishing the claimed composition from the compositions disclosed in Da to Di become apparent from the assessment of inventive step (*infra*).

Inventive step

The invention

6. The invention relates to liquid cleaning compositions for hard surfaces (title).

According to the application as filed (page 1, lines 21-27 and last two lines; page 2, lines 1 to 24) the compositions disclosed

(a) achieve a better cleaning performance on delicate surfaces;
(b) achieve improved greasy soap scum cleaning performance;
(c) achieve excellent limescale removal performance;
(d) are not damaging delicate surfaces such as plastic surfaces;
(e) are safe, i.e. not skin aggressive;
(f) having outstanding soil repellency properties, i.e. they reduce the redeposition of soil;
(g) have good filming and/or streaking performance and good shine performance; and,
(h) have good stain/soil removal performance, even without mechanical action.

Closest prior art

7. In the decision under appeal Dc was considered to be a suitable starting point for the assessment of inventive step. Considering the similarities between the subject-

matters concerned (in terms of the chemical compositions disclosed) and the issue addressed in the present application and document Dc, respectively, the Board sees no reason for taking another stance in this respect. At the oral proceedings, the Appellant expressly conceded that Dc was an appropriate starting point.

7.1 More particularly, Dc (page 2, lines 3-7; paragraph bridging pages 2 and 3) addresses lime scale and soap scum removal from hard surfaces (page 9, lines 18-23), water and stain repellency, hence long term cleaning and sanitizing effects, without, however, expressly addressing the cleaning of delicate surfaces.

7.2 As regards the nature of the components used Dc (paragraph bridging pages 8 and 9) discloses acidic compositions (pH less than 5, preferably less than 3) comprising an acid, an amine oxide, a film-forming cationic compound, a nonionic surfactant, an organic solvent and an amphoteric surfactant. The acids used (page 8, lines 15-26) include citric, sulphamic and glycolic acids. improve mildness.

The compositions illustrated in e.g. Examples 1 and 4 comprise an organosilicone quaternary ammonium compound, an octyl amine oxide, a nonionic alcohol ethoxylate surfactant, diethylene glycol n-butyl ether as a solvent, two acids such as glycolic and citric acids (Example 1) or sulfamic (Example 4). Although the preferred compositions of Dc should be essentially free from conventional chelants (page 8, lines 11-14), the citric acid it may contain (as one of the acidic pH adjusting constituents; see page 8, lines 19-22, and Example 1 of Dc)) is a chelant too. Thus, Example 1 of Dc discloses an acidic composition with features a), b)

c) and d) of Claim 1 at issue, and is thus the embodiment of Dc having most features in common with claim 1 at issue.

7.3 The composition according to Example 1 of Dc thus constitutes the closest prior art.

The technical problem

8. At the oral proceedings the Appellant submitted that in the light of Dc (Example 1) the technical problem consisted in the provision of a new class of cleaning compositions for hard surfaces having comparable cleaning effectiveness whilst being safer to use on delicate surfaces.

The solution

9. As a solution to the technical problem, the amended application under examination proposes the composition according to Claim 1 at issue, which is characterised in particular by the combined features "*having a* ***pH between 3 and 7***" and "*comprising ... a* ***cationic polymer***".

The success of the solution

10. The comparative examples contained in of the application as filed show that the combination of the features of the composition defined in Claim 1 is critical for achieving the particular sought-for effects, i.e. not arbitrary chosen:

10.1 Example 1 of the application as filed illustrates the use of two ethoxylated alcohols, an alkyl amine oxide, a particular solvent (butoxy propoxy propanol, n-BPP),

two different cationic polymer and two particular chelants, and their weight proportions, for formulating Compositions A to E and F to I in accordance with claim 1 at issue, respectively having a pH of 3.5 and 6.5. These compositions, when sprayed onto hard surface, exhibit excellent greasy soap scum cleaning performance and are safe to delicate surfaces such as plastic surfaces.

10.2 Example 2 of the application as filed illustrates a greasy soap scum cleaning performance and next time cleaning benefits. The results of these tests are expressed by reference to a standard global reference (100) reflecting the standard cleaning effect of common hard surface compositions, using a product available on the market as reference. The data were obtained by using two compositions according to Claim 1 (Composition A having a pH of 3.5 and Composition I having a pH of 6.5), one Composition J, identical to Composition I in all but without the cationic polymer, and two standard acidic compositions containing anionics at different pH, i.e. 3.5 and 6.5. The results summarised in the table of page 28 of the application as filed show that the claimed composition improve the greasy soap scum cleaning performance on first and next time cleaning.

10.3 Still according to the application as filed, the level of amine oxide affects the cleaning index, as shown for Composition I on page 28, lines 10-16, said index increasing with increasing amine amine oxide concentration.

11. However, the disclosure of document Dc is not acknowledged in the application as filed and the latter does not comprises a comparison with a composition

according to Dc. Therefore, on the one hand, no improvement whatsoever over the compositions of Dc is made plausible or demonstrated by the examples/ comparative examples contained in the application.

On the other hand, the comparative examples provided with the statement setting out the grounds of appeal *inter alia* comprise a comparison with the closest prior art, i.e. the cleaning compositions of Examples 1 and 4 of Dc.

11.1 From these comparative examples, the following can be gathered:

(a) Composition A according to the invention (having a pH of 3.5), compared to the composition of Example 1 of Dc (having a pH of 2.26), requires a mean number of 19.1 strokes for cleaning the greasy soap scum soil provided on the ceramic tiles under testing, instead of 19.3 for the composition of Dc, which amount to a Cleaning Index of 100 versus 99.

(b) Composition A is **visibly** safer to use on delicate surfaces than the composition of Example 1 of Dc ("non covered" results), at least for the following materials: enamel blue and PVC.

11.2 Since the number of strokes for cleaning the tiles are practically the same, the Board accepts, on the one hand, that the compositions are comparable in terms of greasy soap scum soil cleaning effectiveness. On the other hand, an improvement over the compositions according to Dc can be acknowledged in view of the results achieved on enamel blue and PVC surfaces.

11.3 Since the claimed composition has a pH of 3 to 7, and since the effect of safely preserving the surface to be

cleaned is attained by Composition A having a relatively low pH of 3.5, it is plausible that also the compositions having a pH higher than 3.5 and up to 7 will be safe to use on delicate surfaces.

12. Hence, in the Board's judgement, the comparative examples filed by the Appellant convincingly show that the stated technical problem is effectively solved across the full ambit of claim 1.

Non-obviousness of the solution

13. It remains to be decided whether the claimed solution was obvious in the light of the state of the art.

13.1 Document Dc taken alone

13.1.1 The compositions of Dc necessarily contain an organosilicone quaternary ammonium (i.e. cationic) film-forming "compound". According to Dc (page 1, lines 30-33), "while it is known that polymers and film forming materials can be utilized to give a hard surface a protective layer, (i.e. acrylates, urethanes and silanes) such materials are usually not compatible with chelating agents, quaternary ammonium salts, or in non-neutral conditions (i.e. acidic) that are known to be advantageous for cleaning and disinfecting of hard surfaces".
Hence, Dc actually teaches away from the use of film-forming polymers in acidic cleaning compositions for hard surfaces, *a fortiori* when chelating agents are also present.

So the use incorporation of a cationic film-forming polymer into a composition according to Example 1 of Dc, be it in addition or in replacement of the said

cationic "compound", is not a measure that the skilled person would obviously have considered, let alone in combination with an increase of the pH to a value in the range defined in claim 1 at issue.

13.1.2 Therefore, Dc, taken alone, cannot lead the skilled person towards a composition according to claim 1 at issue.

13.2 Combination of document Dc with any of documents Da, Dd or De

13.2.1 The compositions of Da contain an amine oxide in combination with a zwitterionic surfactant and an acid. They might optionally contain chelants and cationic polymers (e.g. the Luviquat polyquaternium mentioned in Da). The composition illustrated by Example VII contains acids, *inter alia* citric acid (which is also a chelant), zwitterionics, amine oxide and PVP (which should be protonated, hence in form of a cationic polymer). However, neither glycol ether solvents nor nonionics are mentioned in Example VII of Da. Moreover it is stressed in Da (page 8, lines 25-26) that use of low pHs are prefered whilst the incorporation of nonionics is not preferred when considering the lime scale removal ability of the compositions.

Hence, a combined use of chelants, cationic polymers and amine oxide with glycol ether solvent and nonionics in acidic compositions having a pH of 3 to 7 is not suggested in Da.

13.2.2 The acidic foamable compositions illustrated by Dd (e.g. Examples II to VIII) contain, weak acids (in Example VI, citric acid is also a chelant), amine oxide and cosolvent (e.g. mono and dialkyl ethers of ethylene

and diethylene glycols), and might optionally contain minor amounts of nonionics too. The preferred pH of the compositions of Dd is from 1.5 to 3 (column 5, lines 18-23). Cationic polymers are not mentioned at all.

Hence, Dd cannot suggest incorporating such a polymer into a composition according to Dc, Example 1.

13.2.3 The acidic cleaning composition illustrated by e.g. Example 10 of De contains glycol ether solvent, nonionics, citric acid (also a chelant) and cationic polymer. However, this composition does not comprise an amine oxide, but also comprises anionics (namely DOWFAX 2A1, see page 11, line 20)

Moreover, De discloses basic cleaners (see e.g. Table 11), which however contain different ingredients, such as monothanolamines and potassium hydroxide, but no chelant nor nonionics.

Thus, De too does not suggest modifying the composition of Dc/Example 1 such as to provide a composition with a pH in the range defined in claim 1 at issue, and comprising amine oxide together with cationic polymer, nonionic surfactant, glycol ether solvent and chelant.

13.3 The Board is also satisfied that none of the other prior art documents cited provides any more relevant information, let alone a pointer towards a composition according to claim 1 at issue:

13.3.1 The compositions of Db have a pH of from 7 to 14 (see page 13, lines 3-4) and contain an abrasive, a particular chelant (tetra potassium EDTA), an amine oxide, optionally nonionics and glycol ether solvents. The illustrated compositions (e.g. Formulae A and B of

Examples 7, 8 and 9 or Example 10) appear to contain the particular chelant, nonionic surfactant and glycol ether solvent or amine oxide. The use of a cationic polymer is, however, not mentioned.

Hence, Db does not teach or suggest a combination of chelants and cationic polymers in acidic compositions for cleaning hard surfaces.

13.3.2 The acidic compositions illustrated by Df (Table 6), which may have a pH of greater than 2.5 (page 4, lines 35-36), contain nonionics, citrci acid (which is also a chelant) and a cationic polymer. Amine oxides and glycol ether solvents are not mentioned.

13.3.3 The compositions illustrated by Dg appear to comprise a cationic polymer with anionics but no amine-oxide. Dg mentions the possible general use of chelating agents for earth-alkali metals (page 13, line 10), and illustrates it in relation to acidic compositions (the pH may range from 2.5 to 12) (page 13, third last paragraph). Composition E5 of Dg contains a cationic polymer, EDTA and citric acid, anionics and ethanol, but no nonionics, amine-oxide and glycol ether solvent, and the pH is not specified.

13.3.4 The compositions illustrated by Dh can contain cationic polymers, cationic and non-ionic surfactants, but do not comprise any amine oxide, chelant and glycol ether solvent components.

13.3.5 The compositions illustrated in Examples 4 and 5 of Di do not comprise a cationic polymer, nor is it apparent whether their pH is acidic as claimed.

13.3.6 The compositions disclosed by Dk cause less damage to

plastics and can contain nonionics (APG), germicide, fatty acid salts (Claim 1), also amine oxide (Claim 2), and cationic surfactant (Claim 4) as well as a chelating agent (Claim 6). A composition comprising, in combination, a cationic polymers, a glycol ether solvent and a chelant is, however, not disclosed.

14. At the oral proceedings, inventive step was also considered taking De as the closest prior art. In this respect, the Board came to the following conclusions:

14.1 De addresses the problem of imparting excellent water-spreading and oil-repellence to household hard surfaces (paragraph [0001]), such as metal, plastic or stone tiles, bathtubes, towel bowel, kitchen countertops (paragraph [0067]), in order to provide a "next time easier cleaning". De thus addresses the cleaning of delicate hard surfaces such as plastics. Removal of soap scum and hard water soils is expressly mentioned in De (paragraph [0002]). The acidic cleaning composition illustrated by e.g. Example 10 of De contains nonionics, glycol ether solvent citric acid (hence also a chelant) and cationic polymer, not however an amine oxide. De thus also discloses features (a), (c), (d) and (e) of Claim 1 at issue in combination. Amine oxide and EDTA chelants may be optionally present according to the general description of De (paragraph [0046]; paragraph [0056]).

14.2 However, even taking De, e.g. the composition of Example 10, as the closest prior art, the composition according to claim 1 at issue is not obvious in the light of the other cited prior art documents. Even if, in the light of De, the technical problem were merely the provision of a further acidic hard surface cleaning composition, the Board is satisfied that this document

taken alone does not hint at a composition as claimed. Nor can the teaching of De be supplemented by the contrasting teachings of the further documents cited (*supra*).

Conclusion

15. The Board thus comes to the conclusion that the compositions according to claims 1 to 12 and, consequently, the processes according to claims 13 to 15 and the use according to claim 16, which imply the use of said compositions, involve an inventive step (Articles 52(1) and 56 EPC 1973).

Order

For these reasons it is decided that:

The case is remitted to the Examining Division with the order to grant a patent on the basis of claims 1-16 according to the request submitted during oral proceedings and a description adapted thereto.

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated