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**Datasheet for the decision
of 10 August 2021**

Case Number: T 2003/18 - 3.3.06

Application Number: 13152158.5

Publication Number: 2586855

IPC: C11D3/04, C11D3/10, C11D3/20,
C11D3/30

Language of the proceedings: EN

Title of invention:
Liquid acidic hard surface cleaning composition

Patent Proprietor:
The Procter & Gamble Company

Opponent:
Henkel AG & Co. KGaA

Headword:
Acidic surface cleaning composition/P & G

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Inventive step - main request (no), auxiliary requests 1 to 4
(no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 2003/18 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 10 August 2021

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 12 July 2018
rejecting the opposition filed against European
patent No. 2586855 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: G. Santavicca
J. Hoppe

Summary of Facts and Submissions

- I. This appeal filed by the opponent (hereinafter "the appellant") lies from the decision of the Opposition Division to reject the opposition filed against European patent No. 2 586 855, claim 1 thereof reading:
- "1. A liquid acidic hard surface cleaning composition having a pH of from 2 to 2.4 and comprising formic acid and an alkaline material, wherein said composition further comprises a nonionic surfactant."*
- II. With its grounds of appeal the appellant filed new items of evidence D7 to D12 and maintained, *inter alia*, that the subject-matter of claim 1 lacked an inventive step over any of D5 (WO 2007/097809 A1), D3 (WO 2006/136774 A1) or D6 (WO 2008/015381 A1) taken in combination with common general knowledge disclosed in D4: H. Hauthal, G. Wagner: *"Household, Cleaning, Care and Maintenance Products"*, 2004, pages 72-75.
- III. With its reply dated 11 January 2019, the patent proprietor (hereinafter "the respondent") requested that D7 to D10 not be admitted into the proceedings and it maintained its auxiliary requests 1-4 filed before the first instance. As a precautionary measure it also filed a new auxiliary request 5 in case D7 to D10 were admitted.
- IV. The appellant replied and objected that auxiliary request 4 contained features taken from the description, justifying the submission of new items D7 to D10. It also submitted two further items of evidence D13 and D14.

- V. The respondent replied that auxiliary request 4 was already pending before the first instance, and so admissible, and it requested that new items D13 and D14 not be admitted either.
- VI. Following the preliminary opinion of the board that it tended to not admit D7 to D10 nor D13 and D14, and that D3 and D6 disclosed the most promising closest prior art, over which the claimed subject-matter in all the pending requests appeared to be obvious, the respondent contested that D6 might be taken as the closest prior art, and argued that D3 did not hint at using compositions having a pH of 2 or higher, so that the claimed subject-matter, especially that of auxiliary request 1, was not obvious from D3.
- VII. At the oral proceedings which took place on 10 August 2021, the final requests of the parties were as follows:

The appellant requested that the decision under appeal be set aside and the European patent be revoked.

The respondent requested that the appeal be dismissed (main request), or as an auxiliary measure, that the patent be maintained in amended form on the basis of the claims according to one of auxiliary requests 1 to 5 filed with the reply to the appeal, with auxiliary request 5 being filed only if documents D7 to D10 were to be admitted into the proceedings and used for the assessment of the patentability of the claimed subject-matter.

Reasons for the Decision

1. Main request - Inventive step
 - 1.1 The patent in suit ([0001]) concerns liquid compositions delivering good limescale removal performance whilst having a good surface safety profile on the treated surface, i.e. reduced or even no corrosiveness.
 - 1.1.1 The patent ([0002]) acknowledges that prior art liquid compositions for cleaning hard-surfaces essentially focused on providing outstanding cleaning performances on a variety of soils and surfaces, such as improved performance on the removal of limescale. In [0005] it further discloses that some hard surfaces, such as enamel and several metals, e.g. stainless steel and aluminum, are known to be sensitive to acids and may be severely damaged by acidic compositions. Also formic acid-based hard surface cleaner compositions show a surface safety profile that can still be further improved, as they too may still be corrosive to the treated surface.
 - 1.1.2 The patent ([0006]) thus sets its objective to provide a liquid, acidic hard surface cleaning composition that provides good limescale removal performance whilst showing a good surface safety profile on the treated surface. In particular, it provides such a composition comprising formic acid that provides an acceptable limescale removal performance especially when compared to other compositions (having similar levels of free-acidity) having a lower/higher pH as claimed herein and comprising formic acid alone or in combination with another acid (such as phosphoric acid) whilst having an

improved surface safety profile on the treated surface as compared to such other compositions comprising formic acid alone or in combination with another acid (such as phosphoric acid).

- 1.1.3 According to [0007] and [0008], the composition according to claim 1 at issue fulfils this objective and may advantageously be used to clean hard surfaces like glazed and non-glazed ceramic tiles, enamel, stainless steel, Inox®, Formica®, vinyl, no-wax vinyl, linoleum, melamine, glass, plastics.
- 1.2 Closest prior art
- 1.2.1 At the oral proceedings, it was common ground between the parties that D3 disclosed the closest prior art for the assessment of (non)obviousness according to Article 56 EPC.
- 1.2.2 The board has no reason to take a different stance as D3 pertains to the technical field of the invention, namely liquid acidic compositions comprising formic acid, and addresses the objective of cleaning hard surfaces for removal of lime scales (page 1, first two paragraphs). Moreover, as regards the similarity with the other objectives of the patent in suit, such as the safety profile of the composition applied, D3 mentions (page 3, lines 10-14), albeit not listing all the hard materials to be treated, that its compositions exhibit reduced stress cracking of polymeric surfaces, such as acrylic-based polymers, e.g. polymethylmethacrylate, so that D3 addresses a safety profile of the composition.
- 1.2.3 As regards the closest embodiments, the board draws attention in particular to **Example E15 of Table 1-A of D3** (pages 31 and 32), the aqueous, acidic composition

of which includes **formic acid** and **nonionic surfactants** (Lutensol XL79 and Glucocon 215 CS UP), whereby however the Glucocon nonionic is provided at a basic pH (D12), and thus includes an alkaline material. The pH of the composition is not mentioned by D3 however.

1.3 Technical problem

In its reply to the grounds of appeal, the respondent formulated the technical problem as being to provide a formic acid composition with good limescale removal and good surface safety.

1.4 Solution

1.4.1 As to the solution to the above problem, the patent in suit proposes a liquid acidic hard surface cleaning composition as defined in claim 1 at issue, comprising formic acid and an alkaline material, and further comprising a nonionic surfactant, which composition is characterised (over the respective closest embodiment of D3) by **having a pH of from 2 to 2.4**.

1.5 Technical problem effectively solved by this solution

1.5.1 In principle the problem to be solved is fairly derivable from that formulated in paragraph [0006], first sentence, of the patent in suit. However, as D3 was not considered in the application as filed, the problem has possibly to be reformulated on the basis of verifiable technical data provided e.g. in the patent specification.

1.5.2 The data provided in particular in [0132] to [0137] of the patent in suit prove that compositions i and ii according to the invention perform similarly to or

better than - in terms of soil removal performance and surface safety on blue enamel tiles and on aluminium - the more acidic, comparative compositions **a** to **c**, comprising also phosphoric acid or only formic acid and having a pH value of respectively 1.1, 0.95 and 1.77; but produce more, but still acceptable damage on blue enamel and aluminium, and similar/better soil removal performance than comparative compositions iii and d of (slightly) higher pH of 2.5 and 3.6 respectively.

1.5.3 Thus, in respect of the composition at issue, the technical problem formulated in the patent is not too ambitious, as no improvement across the whole breadth is invoked, and it needs not be reformulated as it appears to have been effectively solved as such.

1.6 Obviousness of the solution

1.6.1 The question which arises is whether the skilled person starting from D3, example E15 (table 1-A) and faced with the above technical problem, would have found motivation, without the benefit of hindsight, for adjusting the pH of the composition of the examples of D3, all comprising formic acid and nonionic surfactant, with an alkaline material, to the values as defined in claim 1 at issue.

1.6.2 At the oral proceedings it was not contested that D4 discloses common general knowledge for the compositions at issue, and of particular relevance are the following passages thereof:

- Figure 2.15, which makes apparent that the cleaning action (removal of mineral deposits) increases with more acidic pH values;
- page 73, right column, penultimate and last paragraphs, i.e. that the "compatibility with

materials" is one of the limiting factors for the use of the acids, as well as - as many materials and surfaces of the household are sensitive to acids - that the type and concentration of the acid represent critical aspects for their choice, so that acid-sensitive materials can indeed be treated with suitable acids;

- page 74, left column, first and third paragraphs, that surface materials such as enamel and metals are *inter alia* considered as being sensitive to acids, whereby enamel can be damaged by phosphoric acid, a strong acid of excellent ability to remove lime scale;

- page 74, left column, last paragraph, and right column, fourth paragraph, that nowadays organic acids dominate in acidic household cleaners, whereby formic acid is used in combination with other acids in bathroom and toilet cleaners.

This common general knowledge on surface cleaners for household plays a role on the motivation of the skilled person starting from D3 as the closest prior art, because it touches the two contrasting aspects lime scale removal and sensitivity of the surfaces to acid, which are part of the technical problem posed.

- 1.6.3 In respect of safety of the treated surface, D3 (page 3, lines 15-18) not only hints at using water soluble zinc compounds to reduce stress cracking of polymeric surfaces, and (page 7, lines 10-13) at avoiding the use of inorganic acids such as sulfamic acid (see also D4, page 74, left column, fourth paragraph), which is (stronger than formic acid, thus) more prone than formic acid to be dangerous to hard surfaces treated therewith. D3 also hints at using pH adjusting agents (page 2, line 18) in order to trim the pH of its acidic compositions to the preferred values mentioned in D3,

which include values not in excess than **2.5**, "more preferably of from 0.2 to **2**" (page 5, lines 5 and 6), so that a cleaner with a pH value of 2 is explicitly mentioned in D3 as being a "more preferable embodiment".

- 1.6.4 Hence, at least in view of common general knowledge (D4), the skilled person (which is a formulator of the cleaners for household) starting from D3 and facing the problem posed (which also includes the goal of a "safety profile") expects that by optimising the choice and/or the strength of the acids (as stated in D4), and so the pH value of the cleaner composition, it would be able to obtain at the same time a "good" lime scale removal and the sought-for "safety profile".
- 1.6.5 Since according to D3 this can be also done by trimming (with an alkaline material) the pH of its preferred compositions, including composition E15, to pH values within the disclosed ranges and higher than those most preferred for excellent removal of lime scale (such as 0.25 to 1.5), e.g. more preferably to a value of up to **2**, the skilled person would be prompted to prepare cleaners with pH values in the highest part of the more preferred pH range disclosed in the expectation of thereby providing acceptable lime scale removal and a better sought-for safety profile.
- 1.6.6 Indeed, according to D3, this expectation also applies to the preferred embodiments additionally providing a disinfecting action (see page 29, lines 24-26).
- 1.6.7 Hence D3, at least in view of common general knowledge as disclosed in D4, renders obvious the subject-matter of claim 1 according to the main request.

1.6.8 Consequently, the main request cannot be allowed and the ground for opposition of Articles 100(a) and 56 EPC prejudices the maintenance of the patent as granted.

2. *Auxiliary requests*

2.1 The composition of claim 1 according to **auxiliary request 1** differs from that according to the main request in that the pH is "*from 2.1 to 2.4 ...*".

2.1.1 This pH range lies just outside the "yet more preferably ... pH of 0.2-2" of D3 (page 5, lines 5-6), but fully within the (still) preferred pH ("preferably a pH in of at least 0.1 and not in excess of 2.5" range of D3 (page 5, lines 3-5).

2.1.2 At the oral proceedings, the respondent argued that D3 (page 21, lines 22-27) taught the addition of acids in order to lower the pH rather than the addition of an alkaline material to set the pH to the claimed values. For the board, this argument is not convincing because the invoked passage of D3 only mentions "highly acidic pH" for good cleaning while also providing a disinfecting or sanitizing benefit to hard surfaces. Moreover, from the detailed disclosure of this embodiment in D3 (page 29, lines 21-26), it is apparent that a pH of 3 or less is suitable to achieve this double effect.

2.1.3 Thus, for the board, in view of common general knowledge (D4), the skilled person starting from D3 and facing the problem posed (including the obtention of a "safety profile") would still want to optimise (as stated in D4) the acidic strength of the cleaner, by trimming (with an alkaline material) the pH of its preferred compositions, including composition E15, to

pH values, within its disclosed "preferred" ranges, even to a value of higher than 2 but not in excess of 2.5, in the expectation of thereby providing acceptable lime scale removal (this is, for the board, what D3 discloses with its (only) preferred pH range, namely that the preferable pH range does not lead to excellent but nevertheless good lime scale removal). Of course, in view of the lower acidity strength of a composition with a pH value higher than 2 but not in excess of 2.5, the skilled person also expects a better safety profile. Thus, even within the less preferable pH values of D3 the skilled person would expect to obtain at the same time "good" lime scale removal and the sought-for "safety profile".

- 2.1.4 It is noted in this respect that in its preliminary opinion the Board had also drawn attention to the fact that cleaners with pH values higher than 2 were already known, at least in view of the disclosure of a pH value of **2.25** at page 3, line 23 of D6.

At the oral proceedings, the respondent maintained that the skilled person would not look at D6 which did not address the problem to be solved by the patent, let alone to combine it with D3.

However, for the Board, D6 (page 1, first paragraph; page 3, lines 12-24) pertains to the same technical field of the invention defined in claim 1 at issue, namely liquid acidic compositions, comprising or which may comprise formic acid, and addresses the objective of cleaning hard surfaces for removal of lime scales, and (page 27, line 28) suggests the use of *inter alia* a pH-adjusting agent, such as ammonium or sodium hydroxide in order to provide a degree of alkalinity to the compositions (page 32, lines 3-7).

For the skilled person, the provision of a degree of alkalinity means a reduction of the acidity of the composition, and implies a composition which is less aggressive, i.e. safer for the surface to be treated.

- 2.1.5 Hence, also the subject-matter of claim 1 according to auxiliary request 1 was obvious for the skilled person starting from D3, possibly further motivated by the known option of D6.
- 2.1.6 Thus, the subject-matter of claim 1 at issue does not meet the requirements of Article 56 EPC.
- 2.2 Claim 1 according to **auxiliary request 2** reads as follows (amendments to granted claim 1 made apparent by the Board):

*"1. A liquid acidic hard surface cleaning composition having a pH of from 2 to 2.4 and comprising formic acid and an alkaline material, wherein said composition further comprises a nonionic surfactant, **wherein the alkaline material is selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, the alkali metal oxides such, as sodium and/or potassium oxide or mixtures thereof, monoethanolamine, triethanolamine, ammonia, ammonium carbonate and, choline base and mixtures thereof.**"*

- 2.2.1 Thus, claim 1 at issue differs from claim 1 according to the main request in that it further specifies the alkaline material to be used.
- 2.2.2 That the now specified alkaline materials are or include typical alkaline materials was not in dispute at the oral proceedings before the Board.

2.2.3 Since D3 hints at using pH adjusting agents (page 2, line 18), such as "bases" (page 21, line 24) and "basic compositions . . . , which are typically required only in minor amounts" (page 21, lines 25-26), the choice of at least the most typical bases such as sodium hydroxide as alkaline material for adjusting the pH of a liquid acidic hard surface composition was, in the board's view, obvious for the skilled person.

2.2.4 This is also evident from D6 (pertaining to the same technical field of the patent), which recommends (page 27, line 28) the use of pH-adjusting agents such as ammonium or sodium hydroxide in order to provide a certain degree of alkalinity to the compositions (page 32, lines 3-7). For the skilled person, the provision of a degree of alkalinity means a reduction of the acidity of the composition, and so implies a composition which is inevitably less aggressive. Example 3 of D6, which concerns a specific formulation of the frame formulation of Example 2, illustrates an aqueous, acidic composition comprising formic acid, **sodium hydroxide** (alkaline material) and a (linear alcohol alkoxyated) nonionic surfactant.

2.2.5 Therefore, also the composition of claim 1 according to auxiliary request 2 at issue was obvious for the skilled person starting from D3, and possibly considering D6 so that the requirements of Article 56 EPC are not met.

2.3 Claim 1 according to **auxiliary request 3** reads as follows:

"1. A process of cleaning a hard surface or an object, preferably removing limescale from said hard-surface or said object, comprising the steps of: applying a liquid

acidic hard surface cleaning composition onto said hard-surface or said object; leaving said composition on said hard-surface or said object to act; optionally wiping said hard-surface or object and/or providing mechanical agitation, and then rinsing said hard-surface or said object, said composition having a pH of from 2 to 2.4 and comprising formic acid and an alkaline material, wherein said composition further comprises a nonionic surfactant."

2.3.1 Claim 1 at issue now concerns a process of cleaning a hard surface with a composition of claim 1 as granted.

2.3.2 Since the (same) process is disclosed in D3 (e.g. page 29, lines 9-20) for the application of its compositions, or in D6 (paragraph bridging pages 48 and 49), and since the composition as claimed is obvious over D3, the claimed process is for the board obvious over the disclosure of D3, possibly combined with D6 so that the requirements of Article 56 EPC are not met.

2.4 The composition of claim 1 according to **auxiliary request 4** as follows (amendments to granted claim 1 made apparent by the Board):

*"1. A liquid acidic hard surface cleaning composition having a pH of from 2 to 2.4 and comprising formic acid and an alkaline material, wherein said composition further comprises a nonionic surfactant, **and wherein said composition optionally comprises a further acid, wherein said further acid, when present, is selected from the group consisting of acetic acid, lactic acid, citric acid, and combinations thereof.**"*

2.4.1 Claim 1 at issue now specifies the "optional" presence of the listed further acids.

- 2.4.2 Claim 1 (if clearly allowable - Rule 80 EPC), in view of the **optional** feature concerning the presence of additional acid, is not limited over that of claim 1 according to the main request, and thus falls in any case for the same reason.
- 2.4.3 Even if the particular interpretation given to these additional features by the respondent at the oral proceedings (i.e. despite the mention of "*optionally*", the limitation "*when present*" implies the exclusion of further acids other than those listed) were shared by the board, D3 nevertheless "prefers" embodiments with an acid system consisting of formic and citric acid (see page 6, lines 6-7), so that also this further subject-matter would be obvious over D3. Thus, the subject-matter of claim 1 of this request does not meet the requirements of Article 56 EPC.
- 2.5 As regards **auxiliary request 5**, its filing was conditional to the admittance and assessment of new items of evidence D7 to D10. These new items of evidence have not been used for the assessment of patentability of the main request and auxiliary requests 1 to 4 so that the condition for filing auxiliary request 5 did not occur. There is thus no need to make any decision on this conditional request.

3. Conclusion

None of the claim requests at issue is allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated