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# Datasheet for the decision of 27 January 2015

**Case Number:** T 1654/13 - 3.3.06

**Application Number:** 07857298.9

**Publication Number:** 2094827

**IPC:** C11D1/94

**Language of the proceedings:** EN

**Title of invention:**
Dishwashing composition

**Patent Proprietors:**
Unilever N.V.
Unilever PLC

**Opponent:**
Henkel AG & Co. KGaA

**Headword:**
Dilution-thickening surfactant system / UNILEVER

**Relevant legal provisions:**
RPBA Art. 12(2), 12(4), 13(3)
EPC Art. 52(1), 56, 108, 114(2), 118
EPC R. 99(1)(a)

**Keyword:**
Admissibility of the appeal : yes -
appeal filed by common representative of joint patent proprietors
Admissibility of the appeal : yes -
joint patent proprietors are joint appellants
Inventive step (main request) : no -
surfactant system of claim 9 obvious
Inventive step (auxiliary request) : yes -
technical improvement convincingly shown by means of comparative tests

**Decisions cited:**
G 0003/99, R 0018/09, T 1154/06, T 1366/04

**Catchword:**

Europäisches Patentamt
European Patent Office
Office européen des brevets

**Beschwerdekammern**
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**Case Number: T 1654/13 - 3.3.06**

# D E C I S I O N
# of Technical Board of Appeal 3.3.06
# of 27 January 2015

| | |
|---|---|
| **Appellant:**<br>Patent Proprietors | Unilever N.V.<br>Weena 455<br>3013 AL Rotterdam (NL)<br><br>Unilever PLC<br>Unilever House<br>100 Victoria Embankment<br>London<br>EC4Y 0DY (GB) |
| **Representative:** | Corsten, Michael Allan<br>Unilever Patent Group<br>Olivier van Noortlaan 120<br>3133 AT Vlaardingen (NL) |
| **Respondent:**<br>(Opponent) | Henkel AG & Co. KGaA<br>Henkelstrasse 67<br>40589 Düsseldorf (DE) |
| **Representative:** | Henkel AG & Co. KGaA<br>Patente (FJI)<br>40191 Düsseldorf (DE) |
| **Decision under appeal:** | **Decision of the Opposition Division of the European Patent Office posted on 28 May 2013 revoking European patent No. 2094827 pursuant to Article 101(3)(b) EPC.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | B. Czech |
| **Members:** | L. Li Voti |
| | S. Fernández de Córdoba |

## Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division revoking European patent no. 2 094 827.

II. Said patent had been granted with 10 claims, independent claims 1, 8 and 9 thereof reading as follows:

"*1. A dilution-thickening aqueous liquid cleaning composition comprising*
*(a) 5-50%w of dilution-thickening surfactant system comprising:*
*(i)40-85%w Alkyl ether sulphate (0-4 EO);*
*(ii)0.01-50%w Linear alkylbenzene sulphonate; and*
*(iii)0.01-55%w Betaine;*
*adding up to 100%,*
*and wherein the composition further comprises*
*(b) 2.5-7.5%w of an electrolyte, selected from water-soluble organic and inorganic salts other than anionic surfactants, wherein the cation is chosen from alkali metals, alkaline earth metals, ammonium and mixtures thereof and the anion is chosen from chloride, sulfate, phosphate, acetate, nitrate and mixtures thereof;and wherein the initial viscosity of the composition is 800-1250 mPa.s, wherein the viscosity is determined at 25°C, using a Haake VT550/VT500 viscometer at $215^{-1}$*[sic] *with an MVII spindle."*

"*8. Method to clean hard surfaces comprising the steps of:*
*(a) contacting a carrier with a composition according to any one of claims 1 to 7;*
*(b) treating the combination of carrier and composition with water; and*

*(c) performing a cleaning operation of a surface with the carrier.*"

"*9. A dilution-thickening surfactant system comprising:*
*(a) 40-85%w Alkyl ether sulphate (0-4 EO)*
*(b) 0.01-50%w Linear alkylbenzene sulphonate*
*(c) 0.01-55%w Betaine;*
*adding up to 100%.*"

III. During the opposition proceedings the Opponent relied *inter alia* on the following document:

D1: WO 98/28399 A1.

IV. The Opposition Division found in its decision that the subject-matters of claims 1 and 9 of the patent as granted, as well as the subject-matter of the respective claims 1 according to the then pending 1st and 2nd auxiliary requests lacked an inventive step in the light of document D1.

As regards the finding that claim 9 of the patent as granted lacked an inventive step over the closest prior art represented by document D1, the Opposition Division stated *inter alia* (point 1.3.1 of the decision under appeal):

"... Claim 9 differs from D1, see formulations provided on page 17, by the provision of a three surfactant system comprising alkyl ether sulphate, alkyl benzene sulphonate and betaine.
The effect of this difference is alleged to be the formation of very high viscosity upon dilution, and reference is made to the data provided in paragraph [0077].
However it is noted that the data provided does not support the more general scope of opposed claim 9 but relates to a

more specific formulation also comprising nonionic surfactant and $MgSO_4.7H_2O$.

... As such there is no data on file showing an effect for the three surfactant system over the two surfactant systems disclosed in D1 on page 17.

The objective technical problem starting from D1 is thus considered to be the provision of a further dilution-thickening system providing high viscosity upon dilution.

The solution posed in claim 9 is viewed as obvious because D1, which also concerns dilution-thickening systems, suggests betaine as possible further surfactant component to be incorporated into the compositions disclosed therein. ...

...

With regard to the requisite percentages of claim 9 no special effect can be discerned for such amounts of the various components and thus they are regarded as arbitrary and which the skilled man would readily consider."

V. According to the notice of appeal in Dutch filed on 23 July 2013 (and to its English translation filed on the same day), the present appeal was filed by the (then) common representative of the joint patent proprietors "Namens de octrooihouder, Unilever N.V." ("On behalf of the patent proprietor, Unilever N.V."), the latter being the first of the two patent proprietors mentioned on the patent in suit.

In the statement of grounds dated 27 September 2013 the reasoning given in the appealed decision was contested. A new set of amended claims labelled "3rd auxiliary request" and new experimental data were also filed under cover of said statement.

VI. In its reply the Respondent (Opponent) maintained its view that the subject-matter of the claims according to all pending requests lacked an inventive step over D1.

VII. In its communication dated 30 September 2014, issued pursuant to Rule 100(2) EPC, the Board raised some points concerning the party status of the second proprietor of the patent, i.e. Unilever PLC, and the admissibility of the appeal.

VIII. In the Appellant's reply of 4 December 2014 it was emphasised that Unilever N.V. and Unilever PLC were joint proprietors of the patent in suit. Their common representative at the time of filing the appeal had also acted as common representative of the joint patent proprietors Unilever N.V. and Unilever PLC during the opposition procedure. The wording used in the notice of appeal, referring only to Unilever N.V. as patent proprietor, had thus to be understood in relation to the request for the reduction of the appeal fee only. The Appellant then stated in its letter: "As Mr Rosen Jacobsen acted as the common representative (for the joint appellants) ... the party status of Unilever PLC can only be that of joint appellant".

IX. Oral proceedings before the Board were held on 27 January 2015.

The Board informed the parties that it understood from the contents of the file
-that the appeal had been filed by the common representative on behalf of the joint patent proprietors (hereinafter Appellant) and
- that the appeal fee reduction was not questionable. This was not disputed.

Concerning inventive step with regard to claim 9 as granted (main request) both parties, prompted by the Board, relied essentially on their written submissions only.

The Appellant filed, as sole auxiliary request, a "corrected" version of the set of claims previously pending as "3rd auxiliary request" and consisting of seven claims only.

The Respondent objected neither to the filing of this new auxiliary request nor to the amendments to the claims.

X. Independent claim 1 according to the auxiliary request filed at the oral proceedings differs from claim 1 as granted only in that the expression *"21**5**$^{-1}$"* was replaced by "*21 **s**$^{-1}$*".

Dependent claims 2 to 6 according to this request relate to more specific embodiments of the dilution-thickening aqueous liquid cleaning composition of claim 1.

Independent method claim 7 according to this request is identical in wording to claim 8 as granted, except for the back-reference clause now reading "*according to any one of claim 1 to **6***", since former claim 7 was deleted.

XI. The Appellant requested then that the decision under appeal be set aside and the patent be maintained as granted or, in the alternative, on the basis of the claims according to the auxiliary request filed during oral proceedings.

The Respondent requested that the appeal be dismissed.

XII. The arguments of the parties of relevance here can be summarised as follows.

As regards claim 9 as granted the **Appellant** relied only

on the contents of the statement setting out the grounds of appeal, comprising *inter alia* the following statements:
"In view of the discussion under point 1.3.1 of reasons for the Decision, further experimental tests have been performed...In view of these experimental results, I respectfully disagree with the assertion by the Opposition Division (see point 1.3.1 of the Reasons for the Decision) that the objective technical problem starting from D1 is the provision of a further dilution-thickening system providing high viscosity upon dilution.
By contrast, when starting from D1 the objective technical problem is considered to be the provision of a cleaning composition having enhanced retention in a carrier and/or high viscosity upon dilution such that controlled release, and thus efficient use, of the composition is obtained (see [0012] and [0016]).
It is further noted that D1 does not suggest in any way to use a three-surfactant system according to the contested patent when faced with the above objective technical problem of providing a cleaning composition having enhanced retention in a carrier upon dilution with water such that controlled release, and thus efficient use, of the composition is obtained..."

As regards claim 1 (both requests), the **Appellant** submitted at the oral proceedings that

- document D1 and, in particular, one of the compositions specifically indicated on page 17 of this document, could be considered to represent the closest prior art;

- the technical problem solved by the present inv00ention with respect to the closest prior art consisted in the provision of an improved cleaning

composition showing an enhanced retention in a carrier and higher viscosity on dilution with water so that a better controlled release and efficient use of the composition is obtained;

- the experimental data submitted with the grounds of appeal showed the technical advantage achieved when using a composition as claimed as compared to compositions containing only two surfactants, like those disclosed in document D1;

- the teaching of document D1 would have led the skilled person away from using a ternary mixture of surfactants as claimed in the patent in suit instead of a binary mixture as exemplified; moreover, the teaching of this document was focused primarily on the characteristics of the carrier used for the cleaning compositions and did not contain any indication of a useful initial viscosity for the used cleaning compositions;

- therefore, document D1 did not suggest that by using a ternary surfactant system as in the patent in suit, it was possible to provide a composition having a controlled initial viscosity and an improved viscosity profile on dilution with water that permitted a better retention of the composition in a carrier like a sponge and a more controlled release of the composition upon use;

- therefore, claim 1 at issue involved an inventive step.

As regards claim 9 as granted, the **Respondent** submitted in its written reply to the statement of grounds of appeal in essence that the experimental data submitted

by the Appellant concerned compositions containing water and electrolyte in addition to a surfactant system. Since no data had been submitted that could show an effect attributable to the use of the claimed three surfactant system instead of a two surfactant system as used in D1, the reasons exposed in paragraph 1.3.1 of the decision under appeal still applied.

As regards the subject-matter of claim 1 (both requests) the **Respondent** submitted in writing and orally that

- the Appellant's experimental data concerned compositions which did not reflect those disclosed in document D1;

- moreover, the comparative compositions B and C showed also a viscosity increase upon dilution, and at least comparative composition C showed a viscosity profile upon dilution which was similar to that of composition 1 according to the patent in suit;

- therefore, the technical problem solved by the patent in suit could merely be seen in the provision of an alternative cleaning composition having a selected initial viscosity;

- in this respect, document D1 taught the possibility of using ternary mixtures of surfactants as claimed in the patent in suit; it was thus obvious for the skilled person to try compositions as exemplified on page 17 modified by the addition of a third surfactant such as betaine or linear alkylbenzene sulphonate (LAS hereinafter);

- for the skilled person the choice of a particular initial viscosity was only a matter of routine experimentation in the attempt to adapt the properties of the chosen cleaning composition to its intended use;
- therefore, the subject-matter of claim 1 according to the main and auxiliary request lacked an inventive step.

## Reasons for the Decision

*Admissibility of the appeal*

1. The notice of appeal was filed by the then common representative of the two joint patent proprietors Unilever N.V. and Unilever PLC, indicated on the patent in suit and in the (online) Register (at the time of filing the appeal), i.e. Mr Rosen Jacobson, "on behalf of the patent proprietor, Unilever N.V.".

1.1 In the letter of 4 December 2014 (see point VIII above) it was submitted that the appeal filed by the common representative of the joint patent proprietors had to be understood as having been filed on behalf of both patent proprietors as joint appellants. The wording used in the notice of appeal, referring to only the first one of the two patent proprietors, i.e. Unilever N.V., had thus to be understood in relation to the request for the reduction of the appeal fee only.

1.2 The Board firstly remarks that according to Article 118 EPC (Unity of the European patent application or European patent) proprietors of a European patent who are not the same in respect of different designated Contracting States shall be

regarded as joint proprietors for the purposes of proceedings before the EPO.

This applies in the present case to the joint proprietors Unilever N.V. and Unilever PLC.

1.3 Secondly, the principle that a plurality of legal or natural persons **can only act jointly** as a **single party** (a "group party"), and the requirement that such a group party has to act through a common representative, were endorsed by the Enlarged Board of Appeal with respect to proceedings before the Boards of Appeal in decision R 18/09 of 27 September 2010 (see points 4 to 7 of the reasons) with respect to a petition for review originally **filed** by and on behalf of only one of the three joint patent proprietors. Attention is drawn in this respect in particular to the following passage of decision R 18/09 (see Reasons, point 5; emphasis added): "*[t]he Enlarged Board of Appeal held in decision G 3/99 (OJ EPO 2002, 347) that an opposition filed by several persons in common is to be dealt with as an opposition filed by only one party and such a group of common opponents is to be considered as a single party represented by a common representative (see Reasons, point 15). It further held that, if such a* ***group of common opponents should file an appeal, they can only do so jointly as a single party*** *acting through their common representative (see Reasons, point 17). The same principle has been applied to the filing of an* ***appeal by one of the joint proprietors*** *(see T 1154/06 of 9 December 2008, Reasons, point 1)*."

Said principle was also considered and found to be respected in decision T 1366/04 of 16 April 2008 (see point 1.3 of the reasons, last paragraph). In said case the appeal had been filed by the first one of two joint

patent proprietors only. The Board entrusted with the case held that the requirements of Article 118 EPC were met and that there was no doubt about the identity and appellant status of the two patent proprietors, since the appeal had been filed by the patent proprietor mentioned first on the patent in suit, who had acted as the common representative pursuant to Rule 100(1) EPC 1973.

1.4 Considering the submission of the Appellant mentioned under point 1.1 *supra*, the Board therefore accepts that in the present case, in the absence of an express indication to the contrary in the notice of appeal, the appeal was indeed intended to be filed on behalf of the two joint patent proprietors. Hence, there is no doubt that Unilever N.V. and Unilever PLC are joint appellants in the present case.

1.5 Consequently, the appeal is admissible (Article 108 and Rule 99(1)a) EPC).

*Admissibility of the Appellant's auxiliary request*

2. The Appellant filed with its statement of grounds a new set of amended claims 1 to 8 labelled 3rd auxiliary request. This set of claims differs from the set of claims as granted substantially only in that granted claims 9 and 10 are deleted.

2.1 For the Board, the filing of this request thus represents an attempt to overcome one of the reasons for the revocation of the patent. The deletion of claim 9 (and of claim 10 referring back to this claim), the subject-matter of which had been found to lack inventive step (see point IV above), can be considered as a direct reaction to the reasoning given in the

appealed decision. Moreover, the deletion of said claims raised no new, let alone complex issues, since the remaining independent claims had already been debated in the first instance proceedings.

2.2 The claims according to the new auxiliary request filed at the oral proceedings are identical to those according to said 3rd auxiliary request apart from some straight-forward amendments (see point X above and point 5 *infra*).

2.3 Said new auxiliary request thus did not raise any further complex issues and its late filing was also not objected to by the Respondent.

2.4 Therefore, the Board decided to admit this request into the proceedings despite its late filing (Articles 114(2) EPC and 13(3) RPBA).

*Admissibility of the Appellant's experimental report*

3. An experimental report labelled **"Annex - Additional example"** was submitted together with the statement of grounds of appeal.

3.1 The filing of this experimental report merely constitutes an additional attempt of the Appellant to corroborate its position that the claimed subject-matter was indeed an improvement, compared to the compositions according to the closest prior art. The report can be considered as a reaction to the findings of the Opposition Division, which did not accept that such an improvement had been proven (see page 6, point 1.3.2, sixth full paragraph of the decision reading "*In the absence of any surprising effect the objective technical problem, starting from D1, is considered to*

*be the provision of a further dilution-thickening system.*").

3.2 The Respondent did not object to the late filing of said experimental report either.

3.3 Hence, the Board decided to admit this experimental report into the proceedings despite its late filing (Articles 114(2) EPC and 12(2),(4) RPBA).

*Main request (patent as granted)*

4. Inventive step - Claim 9

4.1 The invention

4.1.1 The invention concerns a dilution-thickening surfactant system.

4.1.2 As can be gathered from the description of the patent in suit (paragraphs [0017]) the dilution-thickening surfactant system of the invention is supposed to be more economical in use and suitable for being advantageously incorporated into cleaning compositions (paragraphs [0012] to [0016]), thereby providing an "*enhanced retention of its cleaning agents (such as surfactants) in a carrier when being diluted*".

4.2 Closest prior art

4.2.1 It is common ground between the parties that document D1 represents the closest prior art.

4.2.2 Considering that D1, as the patent in suit, relates to dilution-thickening surfactant systems, comprising similar surfactant components, to assist retention of a

cleaning composition in a carrier (page 2, lines 28 to 30; page 4, lines 8 to 10; page 8, lines 10 to 14; page 11, line 30, to page 12, line 14), the Board has no reason to take another stance.

4.3 Technical problem solved according to the Appellant

The Appellant held that (see point XII above), starting from D1 as the closest prior art, the objective technical problem solved by the invention, was not merely the provision of a further dilution-thickening system providing high viscosity upon dilution, as exposed in point 1.3.1 of the decision under appeal. The experimental results submitted with the grounds of appeal showed that the technical problem solved was indeed the provision of a cleaning composition having enhanced retention in a carrier and/or high viscosity upon dilution such that controlled release, and thus efficient use, of the composition is obtained.

4.4 Solution

As a solution to this technical problem, the patent in suit proposes the ternary surfactant system according to claim 9, which is characterised in that it comprises specified amounts of three specific surfactant components, namely

"*(a) 40-85%w Alkyl ether sulphate (0-4 EO)*
*(b) 0.01-50%w Linear alkylbenzene sulphonate*
*(c) 0.01-55%w Betaine;*
*adding up to 100%.*"

4.5 Alleged success of the solution

4.5.1 The Board remarks that according to the experimental data filed with the grounds of appeal a cleaning composition no. 1 (according to claim 1 at issue), comprising the three surfactants ethoxylated alkyl ether sulphate (AES hereinafter), LAS and betaine (i.e. a surfactant system according to claim 9 at issue) and, **additionally**, Magnesium Sulphate-$7H_2O$ as **electrolyte**, is compared with similar compositions A to E containing only two out of said three surfactants.

4.5.2 Therefore, in the Board's judgement, for reasons analogous to those expressed in point 1.3.1 of the decision under appeal (see point IV above) with respect to the comparative data contained in the patent in suit, the Appellant's new experimental data do not convincingly show any specific effect or improvement attributable to the use of a ternary surfactant system according to claim 9, but **not comprising electrolyte**, instead of a comparable binary surfactant system.

4.6 Reformulation of the technical problem

Hence, the Board has no reason to call into question the finding of the Opposition Division exposed in point 1.3.1 of the decision under appeal, that starting from D1, the technical problem must be formulated in a less ambitious manner, i.e. as the provision of a further dilution-thickening surfactant system providing high viscosity upon dilution.

4.7 Success of the solution

In view of paragraph [0023] of the description and the diagram of figure 1 of the patent in suit, the Board has no reason to doubt that the ternary surfactant

system of claim 9 solves said less ambitious technical problem.

4.8 Obviousness of the solution

4.8.1 It remains thus to be evaluated whether providing a ternary surfactant system as defined in claim 9 was obvious to the skilled person in the light of the state of the art.

4.8.2 The only argument submitted by the Appellant in this respect (see point XII above) was that D1 did not suggest in any way to use a three-surfactant system according to the contested patent when faced with the technical problem of providing a cleaning composition having enhanced retention in a carrier upon dilution with water such that controlled release, and thus efficient use, of the composition is obtained.

4.8.3 However, the Board notes that this argument does not concern the less ambitious technical problem actually solved by the surfactant system according to claim 9.

Hence the Board has no reason to overturn the finding of the Opposition Division that it was obvious for the skilled person, in the light of the teaching of document D1, to provide a combination of three surfactants according to claim 9 as granted.

4.8.4 More particularly, D1 discloses preferred surfactant systems which thicken when diluted with water and contain one **or more** surfactants of AES, lauryl sulphate and betaine (page 8, lines 12 to 14). Moreover, D1 explicitly suggests that "it is possible to use other anionic surfactant in combination with ... the ether sulphate surface active agent" (page 8, lines 31 to

33), one of the two preferred additional anionic surfactants being alkyl benzene sulphonate (page 9, lines 17 to 19), i.e. the class of surfactants including the well known LAS. A surfactant system comprising such a combination of AES and alkyl benzene sulphonate surfactants is used in the preferred cleaning composition exemplified on page 17, lines 1 to 8, of D1, whilst the particularly preferred cleaning composition exemplified in the following paragraph of D1 contains the preferred mixture of an AES and a betaine.

Therefore, in the Board's judgement, it was indeed obvious for the skilled person, seeking to solve the technical problem (point 4.6 *supra*) and taking into account the teaching of page 8 of D1 referred to *supra*, to try the readily available option of combining the two anionic surfactants used in the preferred formulation described on page 17, lines 1 to 8, of D1, for example a C8-C18 alkyl ether sulphate and LAS, with betaine as a third surfactant component.

4.8.5 Document D1 moreover generally teaches to use typically 2 to 30% of AES (page 8, lines 24 to 25), 10 to 30% alkyl benzene sulphonate (page 9, lines 25 to 26) and 0.5 to 5% betaine (page 11, lines 8 to 9), all percentages being by weight of the fully formulated compositions.

Expressed in percentages by weight based on the ternary surfactant system only, the corresponding individual, relative surfactant concentrations will be higher (to add up to 100%) and will necessarily overlap with the broad ranges of claim 9 at issue (40-85% AES, 0.01-50% LAS and 0.01-55% by weight betaine).

As already held in the decision under appeal (point 1.3.1, penultimate sentence), the skilled person would thus readily consider operating in these ranges.

4.8.6 In the Board's judgement, the skilled person seeking to provide an alternative dilution thickening surfactant system and merely following the general teaching of document D1 would thus obviously try, according to one of several approaches readily available to him, ternary surfactant systems comprising AES, LAS and betaine in relative amounts being such that the resulting systems fall within the scope of claim 9 as granted.

4.9 The Board thus concludes that the subject-matter of claim 9 at issue lacks an inventive step (Articles 52(1) and 56 EPC).

4.10 Hence, the main request is not allowable.

*Auxiliary request*

5. Allowability of the amendments

5.1 The replacement of "$215^{-1}$" by "21 $s^{-1}$" in claim 1 (see point X above) is nothing more than the correction of an obvious typing error and finds basis in the application as filed (published as WO 2008/074667 A1) see e.g. page 6, line 30.

5.2 In claims 2 to 4 further typing errors were removed and claim 7 was deleted altogether, with consequential renumbering of claim 8 and adaptation of the back-reference to the preceding claims contained therein.

5.3 The allowability of these amendments was not contested by the Respondent.

5.4 The Board is also satisfied that the amendments made are not objectionable under Article 123(2) EPC.

6. Inventive step - Claim 1

6.1 The invention

6.1.1 The invention concerns a dilution-thickening aqueous liquid cleaning composition comprising a dilution-thickening surfactant system (see claim 1) and a method to clean hard surfaces involving the use of said composition (see claim 7).

As indicated in the description (paragraphs [0012] to [0016]) cleaning compositions according to the invention are supposed to have enhanced retention in a carrier and/or high viscosity upon dilution, even at high dilution rates, which enhanced retention in the carrier provides controlled release of the composition.

6.2 Closest prior art

6.2.1 D1 relates to a dilution-thickening composition containing a surfactant system to assist retention of the cleaning composition in a carrier (see page 4, lines 8 to 10; page 8, lines 9 to 13; page 11, line 22 to page 12, line 14). It discloses *inter alia* a composition which contains the two surfactant components AES and alkyl benzene sulphonate, as well as an electrolyte (D1, page 17, lines 1 to 8).

6.2.2 Therefore, it was common ground between the parties that document D1, and in particular the preferred

composition disclosed on page 17, lines 1 to 8, represents the closest prior art. The Board has no reason to take another stance.

6.3 Technical problem

The Appellant submitted during oral proceedings that the technical problem solved by the invention consisted in the provision of an improved cleaning composition showing an enhanced retention in a carrier and higher viscosity on dilution with water so that better controlled release and efficient use of the composition is obtained.

6.4 Solution

As the solution to this technical problem, the patent in suit proposes the composition according to claim 1 at issue, which is characterised in particular in that it contains specific amounts of a specific ternary surfactant system and of a specific electrolyte, and in that it has an initial viscosity within a specific range, more particularly (emphasis added by the Board)

*"(a) 5-50%w of dilution-thickening surfactant system comprising:*

*(i)**40-85%w Alkyl ether sulphate** (0-4 EO);*

*(ii)0.01-50%w Linear alkylbenzene sulphonate; and*

*(iii)0.01-55%w Betaine;*

*adding up to 100%,*

*and wherein the composition further comprises*

*(b) **2.5-7.5%w of an electrolyte**, selected from water-soluble organic and inorganic salts other than anionic surfactants, wherein the cation is chosen from alkali metals, alkaline earth metals, ammonium and mixtures*

*thereof and the anion is chosen from chloride, sulfate, phosphate, acetate, nitrate and mixtures thereof; and wherein the* ***initial viscosity of the composition is 800-1250 mPa.s,*** *wherein the viscosity is determined at 25°C, using a Haake VT550/VT500 viscometer at 21* $s^{-1}$ *with an MVII spindle."*

6.5 Success of the solution

6.5.1 The experimental report filed by the Appellant with its statement of grounds contains a comparison

- of a composition no. 1 according to claim 1 at issue containing the ternary surfactant system AES/LAS/ betaine and Magnesium Sulphate-$7H_2O$ as electrolyte

- with compositions A to E, each containing a merely binary surfactant system of AES/betaine, LAS/betaine, AES/betaine, LAS/betaine and AES/LAS, respectively.

The comparative compositions differ from composition no. 1 insofar as they comprise only two surfactant components in concentrations which are either the same (compositions A, B and E) or different (compositions C and D) compared to composition no. 1.

6.5.2 Even though none of the comparative compositions A to E reproduces exactly the composition of D1 (page 17, lines 1 to 8) which is the closest prior art, the compositions A, C and E represent compositions falling within the teaching of document D1, which *inter alia* identifies AES as a most preferred surfactant (page 8, lines 16 to 22). Moreover, composition A falls within the definition of another preferred composition of D1 (described on page 17, lines 10 to 16).

6.5.3 For the Board, these tests thus constitute a fair comparison with the compositions of the type disclosed in document D1.

It can be deduced therefrom that only the composition no. 1 according to the invention has an initial viscosity (1000 mPa.s) as required by claim 1 at issue. It is plausible that such a viscosity contributes to an easy impregnation and good retention of the composition in a carrier.
The comparative compositions A to E, respectively, show instead viscosities (Gel, 5, 5, 420, 3600 mPa.s, respectively) which are outside the claimed range of 800 to 1250 mPa.s. The Board remarks also, in this respect, that even if the viscosities have been measured in this report at a shear rate of 20 $s^{-1}$ instead of 21 $s^{-1}$ as required by claim 1, the viscosities of such compositions measured at 21 $s^{-1}$ would be very similar. Therefore, the viscosity of the composition no. 1 would be within the range of 800 to 1250 mPa.s, while those of the compositions A to E would be outside this range. For the Board, the slightly different shear rate used in the viscosity measurements does not call into question the significance of the comparative tests. This was also not argued by the Respondent.

6.5.4 The tests also show that composition no. 1 has a viscosity profile wherein a viscosity peak of 4350 mPa.s is reached upon dilution at 60% concentration in water whilst by further dilution the viscosity is gradually reduced again. Instead, comparative compositions A, D and E do not show any increase of viscosity upon dilution but a steady decrease of the viscosity. Composition B shows an increase upon dilution from 5 to 50 mPa.s, which value does not

change upon further dilution and is very much lower than the initial viscosity required in claim 1 at issue. Composition C shows a thickening from the initial viscosity of 5 mPa.s to a gel consistency at 70% concentration in water and a reduction of the viscosity upon further dilution. This viscosity profile is very different from that of the composition according to claim 1 at issue which starts from a much higher initial viscosity and involves a thickening upon dilution which does not lead to gel formation, and thus credibly results in an enhanced retention in a carrier and a better controlled release and efficient use of the composition.

6.5.5 Moreover, even though these tests concern only one composition according to claim 1 at issue, the Board accepts as plausible, in the absence of evidence to the contrary, that similar results will be achieved throughout the whole range of compositions claimed according to claim 1.

6.5.6 For the Board, the stated technical problem (point 6.3 *supra*) is thus convincingly solved by the composition according to claim 1 at issue.

6.6 Non-obviousness of the solution

6.6.1 Firstly, the Board remarks that document D1 does not contain any teaching concerning a desirable initial viscosity of the compositions disclosed therein.

6.6.2 Secondly, there is no suggestion in D1 that the use of a ternary surfactant system as defined in claim 1 (components and relative amounts) in combination with electrolyte could bring about any advantage in terms of the viscosity profile of the composition upon dilution,

with a consequential better controlled release and efficient use of the composition.

6.6.3 In fact, document D1 (page 4, lines 9 to 21 and page 5, lines 1 to 9) suggests instead the use of a particular carrier, namely a sponge body containing a pouch, for obtaining a better controlled release of the composition. D1 is not concerned with results obtainable by combining specifically three surfactants with an electrolyte.

6.6.4 Therefore, even assuming that the skilled person could have been induced by the teaching of document D1 to try ternary surfactant systems instead of binary ones (see point 4.8.3 above), and could have tried to modify in this sense the preferred composition listed on page 17 of D1, he would not have done it with the expectation of achieving any advantage in terms of enhanced retention in a carrier and higher viscosity on dilution with water, resulting in a better controlled release and efficient use of the composition.

6.6.5 For the Board, the prior art invoked by the Respondent does not contain any teaching that, without the benefit of hindsight, would actually induce the skilled person to modify the preferred composition of D1 such as to arrive at a composition according to claim 1 at issue with the expectation of solving the above mentioned technical problem.

6.6.6 The Board thus concludes that the compositions according to claim 1, and claims 2 to 6 dependent thereon, as well as the method according to claim 7 making use of such compositions, involve an inventive step (Articles 52(1) and 56 EPC).

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent with the claims 1 to 7 according to the auxiliary request filed during oral proceedings, figure 1 of the patent as granted and a description to be adapted.

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated