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**Datasheet for the decision
of 5 June 2012**

Case Number: T 1852/09 - 3.3.06

Application Number: 01974165.1

Publication Number: 1315790

IPC: C11D 3/37

Language of the proceedings: EN

Title of invention:

Polycarboxylic acid containing three-in-one dishwashing composition

Patent Proprietors:

Unilever PLC
Unilever N.V.

Opponent:

Henkel AG & Co. KGaA

Headword:

Three-in-one dishwashing composition/UNILEVER

Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step (all requests): no - obvious modification"

Decisions cited:

-

Catchword:

-



Case Number: T 1852/09 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 5 June 2012

Appellant: Unilever N.V.
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NL-3013 AL Rotterdam (NL)

Representative: Rosen Jacobson, Frans Lucas M.
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Respondent: Henkel AG & Co. KGaA
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 16 July 2009
revoking European patent No. 1315790 pursuant
to Article 101(3)(b) EPC.

Composition of the Board:

Chairman: L. Li Voti
Members: P. Ammendola
U. Tronser

Summary of Facts and Submissions

- I. This appeal is from the decision of the Opposition Division to revoke European patent No. 1 315 790, concerning a polycarboxylic acid containing three-in-one dishwashing composition.
- II. The grant of the patent-in-suit had been opposed, *inter alia*, on the grounds of lack of inventive step (Article 100(a) EPC 1973). The Opponent had referred to, *inter alia*, the documents:

(3) = EP-A-0 877 002

and

(4) = WO 99/58633.

- III. During the opposition proceedings the Patent Proprietors had filed, *inter alia*, a set of amended claims labelled as 1. Auxiliary Request.

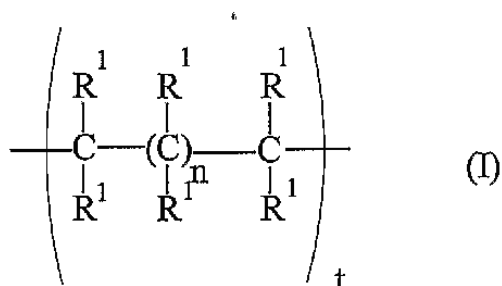
Claim 1 of this 1. Auxiliary Request reads:

"1. A dishwashing composition effective for cleaning glassware in hard water, the dishwashing composition comprising:

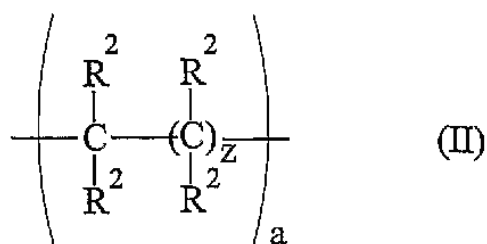
(a) a hydrophobically modified polycarboxylic acid; and

(b) a water soluble polymer that reduces phosphate scale formation

wherein said polycarboxylic acid (a) comprises at least one structural unit selected from the group consisting of:

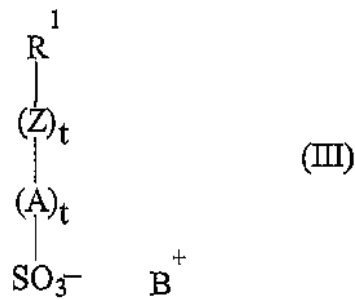


and



wherein each R^1 and R^2 are independently a hydrogen, hydroxy, alkoxy, carboxylic acid group, carboxylic acid salt, ester group, amide group, aryl, C_{1-20} alkyl, C_{2-20} alkenyl, C_{2-20} alkynyl or a polyoxyalkylene condensate of an aliphatic group, n is an integer from about 0 to 8, z is an integer from about 1 to about 8, t is an integer from about 0 to about 2,000 and a is an integer from about 0 to about 2,000, with the proviso that a and t are not simultaneously 0 and at least one R^1 or one R^2 is a carboxylic acid group, or a salt thereof; and

wherein said soluble polymer (b) has a polymer backbone comprising at least one structural unit derived from a monomer having the formula:



wherein R^1 is a group comprising at least one sp^2 bond, Z is N , P , S , or an amido or ester link, A is a mono- or a polycyclic aromatic group or an aliphatic group and each t is independently 0 or 1 and B^+ is a monovalent cation."

IV. In its decision the Opposition Division, after having refused the higher ranking request of the Patent Proprietors, considered that the above-cited claim 1 of the 1. Auxiliary Request was obvious for the skilled person (Articles 52(1) EPC and 56 EPC 1973) starting from the dishwashing compositions disclosed in document (3).

In the absence of convincing experimental data proving a surprising technical advantage of the claimed subject-matter, the objective problem solved was considered to be the provision of an alternative to the prior art.

The solution proposed in claim 1 of the 1. Auxiliary Request was found not to involve an inventive step since, on the one side, the anti-filming and anti-scaling properties of the sulphonated copolymers of AA (acrylic acid) and AMPS (2-acryloamido-2-methylpropane sulfonic acid) present in the compositions disclosed in document (3) also necessarily implied a reduction of

spotting, and, on the other side, a contribution of hydrophobically modified polycarboxylic acids onto the overall glass appearance also was already known in the prior art, e.g. in document (4).

Thus, the skilled person would consider obvious to add a hydrophobically modified polycarboxylic acid into the dishwashing compositions of document (3) in order to produce alternative cleaning compositions with an overall good appearance of the treated glasses.

Hence, the Opposition Division concluded that, even taking into account the amendments made by the Patent Proprietors during the opposition proceedings, the patent-in-suit did not fulfil the requirements of the EPC.

- V. One of the Patent Proprietors (hereinafter Appellant) lodged an appeal against this decision (notice of appeal and appeal fee received at the EPO on 10 September 2009) and filed with the grounds of appeal (received at the EPO on 26 November 2009) two sets of amended claims.

The Opponent (hereinafter Respondent) replied objecting that the requests filed by the Appellant lacked, *inter alia*, an inventive step.

With a letter dated 30 May 2012 the Appellant announced its absence at the oral proceedings and filed two new sets of amended claims respectively labelled as New Main Request and New Auxiliary Request.

VI. The Appellant requested in writing that the decision under appeal be set aside and the patent be maintained on the basis of the New Main Request filed with the letter of 30 May 2012 or, alternatively, of the New Auxiliary Request also filed with the letter of 30 May 2012.

The Respondent requested that the appeal be dismissed.

VII. Claim 1 of the New Main Request differs mainly from claim 1 of the 1. Auxiliary Request refused by the Opposition Division in that the final wording of the latter reading

"wherein R^1 is a group comprising at least one sp^2 bond, Z is N, P, S, or an amido or ester link, A is a mono- or a polycyclic aromatic group or an aliphatic group and each t is independently 0 or 1 and B^+ is a monovalent cation"

has been amended into

"wherein R^1 is a group comprising at least one sp^2 bond, Z is O, N, P, S, or an amido or ester link, A is a mono- or a polycyclic aromatic group or an aliphatic group and each t is independently 0 or 1 and B^+ is a monovalent cation, wherein R^1 is ethenyl, Z is amido, A is a divalent butyl group, each t is 1 and B^+ is Na^+ ".

Claim 1 of the New Auxiliary Request differs from claim 1 of the New Main Request only in that the just cited final portion of this latter is replaced by

"wherein R1 is ethenyl, Z is amido, A is a divalent butyl group, each t is 1 and B+ is Na+."

VIII. The Appellant's arguments as to the inventiveness of the claimed subject-matter may be summarised as follows:

A three-in-one composition, such as the claimed ones, would be required to clean soiled glassware and to provide to this latter a scale and spot free appearance even in hard water and without additional rinse aid. The dishwashing compositions of document (3) would not be disclosed to be effective in cleaning soiled glass and in providing good spotting, thus, they would not appear to be three-in-one compositions, but rather compositions in which certain scale inhibitors were just used in order to prevent scaling in conditions of hard water.

On the contrary, document (4) was directed to machine dishwashing detergent or rinse aid formulations which delivered excellent final glassware appearance as measured in cleaning, spotting and filming, under conditions of food soiling, hard water and high temperatures. Thus, this citation addressed all the features needed to obtain a good-working three-in-one tablet and represented the closest prior art.

Document (4) suggested the use of compositions comprising a particular class of water soluble cationic or amphoteric polymers, such as Celquat H-100 (not in accordance with the definition of any of the two polymers "(a)" or "(b)" of the patent-in-suit). Indeed, as apparent from data reported for Test 1 in Table 2, the formulation (hereinafter the **Celquat/Sokalan**

formulation) containing this polymer and a mixture of the antiscalants Sokalan PA25 and Sokalan CP5 (also not in accordance with the definition of any of the two polymers "(a)" or "(b)" of the patent-in-suit) produced the best overall results vis-à-vis a control example (only containing the 1:2 Sokalan mixture and no further polymer). The other comparative formulations (all also containing the 1:2 Sokalan mixture) tested in document (4) provided results that were intermediate between the control and the Celquat/Sokalan formulation. Among these other comparative formulations the only one containing a polymer in accordance to any of the two polymers "(a)" or "(b)" of the patent-in-suit was that (hereinafter indicated as the **Acusol/Sokalan formulation**) comprising Acusol 460 ND, i.e. a hydrophobically modified polycarboxylate. However, even though the overall score of the Acusol/Sokalan formulation was better than that of the control (4.8 vs. 5.3), it remained much worse than that of the Celquat/Sokalan formulation. In particular, the spotting score of the Acusol/Sokalan formulation was actually worse than the control (4.3 vs. 4.1).

Hence document (4) would only teach to use water soluble polymers (such as Celquat H-100) different from the ones of the present invention and, in particular, to use them instead of the Acusol 460, thereby leading away from the possibility of using formulations comprising a hydrophobically modified polycarboxylate such as Acusol 460.

Nor would the combination of documents (4) and (3) render obvious the claimed specific combination of hydrophobically modified polycarboxylates and water

soluble antiscalants. Indeed, the skilled person would not be motivated to such a combination already because document (3) only disclosed the ability of the water soluble antiscalant to produce good filming scores. Hence, there would be no motivation for a skilled person, when starting from the formulations of document (4) that had already good filming scores to use the antiscalants disclosed in document (3).

The Appellant stressed that, contrary to the finding of the Opposition Division, there was no reason for expecting that the polymers known from document (3) also reduced spotting. Indeed, as apparent for example from Table 2 in document (4), polymers that were good in preventing filming (scores from 0.5 to 1.3), had nevertheless very poor spotting scores (scores from 3.2 to 4.3).

Accordingly, the claimed subject-matter was not possibly rendered obvious by the available prior art.

IX. The Respondent's arguments on the issue of inventive step may be summarised as follows:

The Opposition Division had correctly identified the closest prior art in the compositions disclosed in document (3), whose improved antiscaling effect would be expected by the skilled person to also improve the spotting score. Indeed, the Appellant had failed to provide any evidence supporting its allegation to the contrary. The fact that filming and spotting had not always been reduced to a comparable extent in the examples of Table 2 of document (4), would not be sufficient at reversing the general expectation of the

skilled person that antiscalants are beneficial to the overall appearance of washed glasses, i.e. to the sum of spotting and filming scores, in particular since all examples considered in document (4), inclusive the control example, contained antiscalant ingredients (the Sokalan mixture) and since document (4) itself explicitly recognised the positive effect of antiscalants on both filming and spotting.

Nevertheless, the subject-matter of the claims of the present New Main Request and New Auxiliary Request would remain obvious even for the skilled person starting from the Celquat/Sokalan formulation of document (4), as suggested by the Appellant.

Indeed, the data in the patent-in-suit would not permit any sound prediction as to whether the compositions of the invention performed better or worse than this prior art in respect of the overall glass appearance. The only sound conclusion derivable from the comparison of the data in the patent-in-suit and those in document (4) was that, similarly to the Celquat/Sokalan formulation, also the compositions according to present invention provided superior glass appearance in comparison to those based on the combination of Acusol 460 with the Sokalan mixture.

Hence, the sole technical problem credibly solved was just the provision of a further dishwashing composition, i.e. a (more or less effective) alternative to the prior art.

Since document (4) itself explicitly acknowledged at page 39, lines 10 to 12, the possible existence of

antiscalants particularly effective in favouring the enhancement of glass appearance, it would be apparent to the skilled reader of this citation that the posed problem could simply be solved not only by using particularly effective antiscalants in combination with the Celquat H-100, but also by combining these particularly effective antiscalants with the Acusol 460.

Since the copolymers of AA and AMPS were suggested as the most effective antiscalants in document (3), the subject-matter of claim 1 of the New Main Request and of the New Auxiliary Request was rendered obvious by the combination of documents (4) and (3) and none of the Appellant's requests was allowable.

Reasons for the decision

Appellant's New Main Request

1. Since at the oral proceedings it has appeared evident that claim 1 lacks of inventive step for the reasons given here below, it has turned out unnecessary for the Board to consider the other objections of the Respondent as to the patentability of this request.

2. Inventive step: claim 1

This claim is directed to a dishwashing composition effective for cleaning glassware in hard water (i.e. a three-in-one dishwashing composition) comprising a hydrophobically modified polymer and a water soluble polycarboxylic acid according to the defined formulae.

In particular, it is apparent e.g. from the examples 3 and 9 of the patent-in-suit that one of the preferred hydrophobically modified polycarboxylic acids is the Acusol 460 and that one of the preferred water-soluble polymer is a copolymer of AA and AMPS.

2.1 The Board notes that the patent-in-suit repeatedly stresses that the aimed technical effect is the enhancement of the overall glass appearance (i.e. the minimization of the sum of the spotting and filming scores, see in the patent-in-suit e.g. paragraphs [0040] and [0045]). Thus, the Board concurs with the Appellant that the Celquat/Sokalan formulation according to the invention claimed in document (4) represents a suitable starting point for the assessment of inventive step, since also this prior art focuses, similarly to the patent-in-suit, on enhancing the overall glass appearance of the cleaned glassware, i.e. aims at minimizing the sum of spotting and filming scores (see e.g. Table 2 of document (4)).

2.2 However, the Board finds unconvincing the assumption, implicit in the Appellant's reasoning resumed at Section VIII of the Facts and Submissions, that the subject-matter of the present claim 1 provides at least the same level of overall glass appearance as the prior art.

Indeed, no (control) example of the patent-in-suit is representative of the invention claimed in document (4), and no direct comparison can be made between the scores reported in the patent-in-suit and those given in document (4), due to the different testing conditions. Hence, no element in the patent-in-suit

justifies the assumption that the level of overall glass appearance aimed at and achieved by the claimed compositions is necessarily at least as good as that provided by the Celquat/Sokalan formulation.

Thus, the Board concurs with the Respondent that the only sound prediction as to the level of overall glass appearance reasonably achieved by the compositions of claim 1 of the New Main Request is that derivable from the comparison in Table 3 of the patent-in-suit of example 3 (a composition in accordance with the definitions given in claim 1 of both the present requests) with (comparative) example 5, whose composition appears substantially similar to that of the (comparative) Acusol/Sokalan formulation of document (4). This comparison renders only plausible that the overall glass appearance provided by the presently claimed dishwashing compositions is (similarly to the Celquat/Sokalan formulation of document (4)) **better than that provided by the combination of Acusol 460 and the Sokalan mixture.**

Accordingly, the Board concludes that the sole technical problem credibly solved vis-à-vis the prior art by the subject-matter of claim 1 of the New Main Request is the provision of a **further** dishwashing composition producing an overall appearance of the washed glassware that is **better** than that achieved e.g. by the Acusol/Sokalan formulation used as comparison in document (4). Only in this sense the solved technical problem may also be considered as the provision of an **alternative** to the Celquat/Sokalan formulation of document (4) (which also produces an overall appearance

of the washed glassware that is **better** than that achieved by the Acusol/Sokalan formulation).

- 2.3 The Appellant has considered the relevance of document (4) to be limited to the fact that the combination of Celquat H-100 with the Sokalan mixture produces the best score for the overall glass appearance, as shown in Table 2.

However, as indicated above, in the present case the relevant question is **not**, as implied in the Appellant's reasoning, how to formulate further detergent compositions providing an overall glass appearance **as good as (or even superior to) that produced by the Celquat/Sokalan formulation**, but rather how to formulate further detergent compositions providing an overall glass appearance **superior to that obtained from the Acusol/Sokalan formulation** shown in Table 2.

In view of this technical problem, the skilled reader of document (4) would, in the opinion of the Board, also have taken into consideration the additional teaching in the same citation (see page 46, lines 12 to 15) that the formation of scale (favoured at high wash temperatures and water hardness) affects **both** spotting and filming scores on glassware (and, thus, necessarily also the overall glass appearance). The same teaching is repeated in the portion of document (4) describing in general the antiscalants, which in particular states at page 39, lines 10 to 12, that "*some antiscalant polymers, notably polyacrylates, are claimed as providing some **glassware appearance benefits***" (emphasis added by the Board).

The Board considers it appropriate to stress that the credibility of this teaching is not jeopardized by the fact, stressed by the Appellant, that in Table 2 of document (4) the filming and spotting scores do not vary in the same direction and/or in the same extent when going from one formulation to the other. Due to the manifest complexity of the effects under consideration and, in particular, in the absence of any information as to the scores obtained in the absence of any antiscalant additive, these differences between spotting and filming scores are insufficient at concluding that, contrary to the above-cited explicit statements in the same document (and to the similar finding of the Opposition Division), the level of spotting score should rather be expected to be independent on the efficacy of the antiscalant.

Hence, the Board sees no reason to disregard the fact that document (4) itself suggests to the skilled person that some antiscalant ingredients also favour the overall glass appearance.

- 2.4 Under these circumstances it is apparent to the skilled reader of this citation that the aimed level of overall glass appearance may be achieved not only when the detergent composition comprises Celquat H-100 (or other polymers similar to Celquat H-100) in combination with the Sokalan mixture (or in combination with any of the other antiscalants explicitly mentioned in this citation), but also when it comprises, e.g. instead of the Sokalan mixture, other possibly existing antiscalants that are known to be **particularly effective on glass** (i.e. also when using any

particularly effective antiscalants in combination with e.g. the Celquat H-100 or even with the Acusol 460).

It is evident that the skilled reader of the above-cited passage at page 39 of document (4) would search for any such particularly effective antiscalant in particular among the known "*polyacrylates*", and would thus find in document (3) (see all the figures and tables in these citation) that among several tested polyacrylate antiscalants, the most effective antiscalants for washing glass in hard water are **certain copolymers of AA (acrylic acid) and AMPS (2-acryloamido-2-methylpropane sulfonic acid)** which produce the lowest filming scores.

These polymers are also cited among the possible antiscalants in document (4) (see page 38, lines 19 to 28).

Thus, a skilled person would reasonably expect that the replacement of the Sokalan mixture in the detergent compositions disclosed in document (4) comprising Acusol 460 by means of the copolymers of AA and AMPS disclosed as most effective in document (3) results in a level of overall glass appearance that is superior to that produced by the Acusol/Sokalan formulation and, thus, solves the posed technical problem.

- 2.5 Hence, the skilled person arrives at the subject-matter of claim 1 of the New Main Request, without exercising any inventive ingenuity. Accordingly, this request is found to contravene Article 56 EPC 1973 and, thus, is not allowable.

New Auxiliary Request

3. Claim 1 of this request differs from that of the New Main Request for the narrower definition of the water soluble antiscalant polymer (see above Section VII of the Facts and Submissions). However, even such narrower definition of this ingredient apparently embraces the copolymers of AA and AMPS disclosed as most effective in document (3). Hence, also claim 1 of the New Auxiliary Request embraces the detergent compositions obtainable by using these copolymers instead of the Sokalan mixture, in the detergent compositions disclosed in document (4) comprising Acusol 460. Therefore, the same reasons indicated above for finding claim 1 of the New Main Request contrary to Article 56 EPC 1973, apply equally to claim 1 of the New Auxiliary Request. Thus, also this latter is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Magliano

L. Li Voti