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**Datasheet for the decision  
of 1 December 2022**

**Case Number:** T 1348/20 - 3.3.06

**Application Number:** 12788936.8

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**Language of the proceedings:** EN

**Title of invention:**  
NON-PHOSPHATE DETERGENTS AND NON-PHOSPHORIC ACIDS IN AN  
ALTERNATING ALKALI/ACID SYSTEM FOR WAREWASHING

**Applicant:**  
Ecolab USA Inc.

**Headword:**  
Ecolab/alkali-acid system

**Relevant legal provisions:**  
EPC Art. 56  
RPBA 2020 Art. 13(2), 13(1)

**Keyword:**

Inventive step - (no)

Amendment to appeal case - amendment gives rise to new objections (yes)

Amendment after summons - cogent reasons (no)

**Decisions cited:**

**Catchword:**



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Case Number: T 1348/20 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 1 December 2022**

**Appellant:** Ecolab USA Inc.  
(Applicant) 1 Ecolab Place  
St. Paul, MN 55102 (US)

**Representative:** Godemeyer Blum Lenze Patentanwälte  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 17 January 2020  
refusing European patent application No.  
12788936.8 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairwoman** J. Hoppe  
**Members:** R. Elsässer  
S. Arrojo

## Summary of Facts and Submissions

I. The appeal of the applicant (hereinafter: the appellant) lies against the decision of the examining division to refuse the application. The decision mentions *inter alia* the following documents:

- D1: US 2004/194810 A1
- D4: Safety Data Sheet "Keystone Omega Solid warewashing machine detergent"
- D5: Safety Data Sheet "Topmat Professional Reiniger-Tabs"
- D6: Safety Data Sheet "Lime-A-Way"

The division held that the main request as well as the first and second auxiliary requests did not involve an inventive step, when starting from example 3 of D1.

II. With its grounds of appeal the appellant contested the decision, resubmitted the main request and the first and second auxiliary request and filed a new third auxiliary request. The appellant argued *inter alia* that the subject matter of claim 1 of the main request was inventive over D1.

III. After having received the preliminary opinion of the board, the appellant filed with submission dated 4 May 2022 auxiliary requests 4 and 5 and brought forward further arguments concerning the inventive step objection starting from D1. At the oral proceedings, the appellant presented further arguments in this regard and explained its interpretation of the claimed subject-matter.

- IV. At the end of the oral proceedings the appellant's requests were the following:
- that the decision under appeal be set aside and a patent be granted based on the main request, filed with the grounds of appeal, or
  - as an auxiliary measure based on one of auxiliary requests 1, 2 or 3, filed with the grounds of appeal,
  - or based on auxiliary requests 4 or 5, filed with letter dated 4 May 2022.

### **Reasons for the Decision**

1. Main request

1.1 Claim 1 of the main request reads as follows:

"1. A method of cleaning an article in a dish machine comprising:

- (a) applying to the article a first alkaline cleaning agent, wherein said agent does not include phosphate or silicate;
- (b) applying to the article a first acidic cleaning agent, wherein said agent does not include phosphoric acid;

and further wherein said cleaning is improved over the cleaning of phosphate and/or silicate comprising agents, wherein the acid is selected from the group consisting of hydroxyacetic acid, citric acid, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, gluconic acid, itaconic acid, trichloroacetic acid, urea hydrochloride, benzoic acid, oxalic acid, malonic acid, urea sulfate, succinic acid, glutaric acid, maleic acid, fumaric acid, adipic acid, terephthalic acid, sulfuric acid, methylsulfamic acid, hydrochloric acid, hydrobromic acid, hydrofluoric

acid, nitric acid, and mixtures thereof."

1.2 Article 56 EPC

The board confirms the examining division's conclusion that the subject-matter of claim 1 does not involve an inventive step so that the main request is not allowable.

1.2.1 The claim is directed to dishwashing methods in a dish machine, which include an alkaline step and an acidic step.

1.2.2 The examining division was correct in basing their assessment on D1 and applying example 3 as starting point, because D1 is directed to a very similar subject matter (abstract, claim 1) and example 3 provides a method comprising an alkaline and an acidic cleaning step and carried out in a consumer dish machine whereby sodium hydroxide is used as alkaline component and amidosulfonic (= sulfamic) acid is used as acidic component.

1.2.3 The appellant argued that example 3 was not a suitable starting point because it did not represent the overall teaching of D1.

In particular, the appellant pointed out that the experimental glass-tube tablet used in example 3 was only accidentally free of phosphorous compounds because in real life, cleaning agents did not only contain acidic and alkaline substances but also other components, such as surfactants. Such compounds were also disclosed in D1 as preferred additional components and some of those contained phosphates or phosphoric acid.

This finding was also reflected by the fact that the other examples of D1 employed such commercial cleaning agents which all included phosphates so that example 3 had to be considered as an outlier which the skilled person would not use as a starting point.

In this context, the appellant mentioned for the first time at the oral proceedings that in view of the usual components of such real-life cleaning agents, claim 1 had to be read as implicitly requiring the presence of a surfactant.

Moreover, the skilled person would learn from example 12 of D1 that urea hydrochloride gave better cleaning performance than sulfamic acid but yet was still not able to completely remove the grey film. In order to achieve this, example 17 showed that higher amounts of acid were required which run counter to the goal of the present invention.

The appellant also stressed that the present application was concerned with the reduction of the amount of detergent used in automatic dishwashing machines that used conductance measurements to control the dosing of the detergent. This problem did not arise in the method of example 3 which was merely a "model composition" in a glass tube to demonstrate improved starch cleaning so that it was not a suitable starting point for the assessment of inventive step.

1.2.4 These arguments are however not convincing.

Firstly, the appellant's interpretation that claim 1 implied the presence of a surfactant in the alkaline cleaning agent is not accepted because there is no

reason to read this limitation into the claim. In particular, there is no evidence on file that would prove the appellant's allegation that alkaline cleaning agents used in dishwashing always and necessarily contain surfactants. Turning for instance to D1, it is noted that the only compulsory component of the alkaline composition is an alkaline carrier such as an hydroxide (paragraph 0040) and any additional components, such as surfactants, are optional (paragraph 0041). Moreover, similar language is found in the application (page 4, line 1) so that even if the claim were to be read in the light of the description, there would be no implicit requirement of a surfactant in the alkaline cleaning agent.

The further argument that example 3 can be qualified as an outlier is not accepted either, because said example reflects the core teaching of D1 as set out in paragraph 0006 and claim 1, namely to have alternating alkaline and acidic cleaning steps.

Moreover, the chemicals employed in example 3, namely sodium hydroxide and sulfamic acid, are also in line with the teaching of D1 as set out in paragraph 0040 and 0179. The skilled person would also note that example 3 achieves good cleaning results (better than the commercial cleaning agent "Topmat", in table 4, page 19 of D1) so that the performance of example 3 would not disqualify it from being used as a starting point for the assessment of inventive step. This is true even when example 12 (page 24 in D1) is considered, because the cleaning performance of example 3 with a result of 9-10 on a scale of 0-10 does not appear to be inferior to the results of example 12 so that there is no reason for the skilled person to disregard example 3.



As set out above, D1 teaches that any additional components, such as the phosphorous containing compounds mentioned by the appellant, are only optional so that their absence in example 3 does not indicate that the example is not representative of the overall teaching of D1. At any rate, D1 does not teach that phosphorous containing compounds would be necessary or essential.

Moreover, the appellant's allegation that the cleaning agents used in the other examples would all contain phosphorous is at least not proven. For instance, there is no evidence on file disclosing the composition of the detergents "Solid Fusion" or "Perclin Intensive" (i.e. those used in the examples). The appellant stated during the oral proceedings that "Perclin Intensive" contained phosphate but this is a mere allegation. With regard to the detergent "Omega Solid" that is used in other examples, the composition given on page 2 of its data sheet D4 appears to rather suggest that it does not contain phosphorous containing compounds. The appellant contested this finding at the oral proceedings by referring to page 3 of D4 where it is disclosed that the decomposition products of "Omega Solid" may contain oxides of phosphorous. However, the same wording is present in the data sheet D6 of the product "Lime-A-Way" which, according to the appellant's own submission, is free of phosphorous. Therefore the reference to the potential (i.e. "may"!) decomposition products "oxides of phosphorous" does not appear to reliably prove the presence of phosphorous in a product.

In this context, it is noted that, while the data sheets on file (D4-D6) are post published, the

appellant has not contested the relevance of these documents (D6 was filed by the appellant itself during the examining proceedings). Moreover, even if the documents were to be disregarded for being post-published, the conclusion set out above that there is nothing that would suggest that the other examples of D1 employ phosphorous containing chemicals would still be correct.

Finally, the fact that example 3 is not concerned with dishwashing methods where the detergent dosage is controlled by conductance measurement is irrelevant, since claim 1 is not limited to such methods either. Rather, it also encompasses methods where the alkaline and acidic cleaning agents are present within a tablet and separated by paraffin layers (see page 10, line 9-23 of the description). At least for these embodiments, example 3 is a suitable starting point.

- 1.2.5 The cleaning method of example 3 discloses all but one feature of claim 1:

Undisputedly, sodium hydroxide is an alkaline substance and sulfamic acid is acidic. This is confirmed in the description of the application on page 3, line 28 and page 4, line 14. No other substances, in particular no phosphates and no phosphoric acid, are included in the tablet so that the negative features "wherein said agent does not include phosphate or silicate" and "wherein said agent does not include phosphoric acid" are also disclosed by the example. Moreover, paragraph 0232 of D1 teaches that the layered construction of the experimental tablet of example 3 leads to a sequential release of the alkaline and the acidic substances, resulting in separate alkaline and acidic cleaning steps, as claimed.

The appellant argued that example 3 did not disclose said negative features because neither D1 nor the specific example 3 explicitly taught that said substances had to be avoided.

However, this argument is not convincing because there is no reason to assume that other components, such as phosphates, are included in the tablet although not being mentioned. In contrast to what the appellant appears to suggest, an explicit disclosure of the negative features in D1 is not required for said negative features being disclosed. Therefore the negative features cannot distinguish the claimed subject-matter from the disclosure of example 3.

From the above, it follows that the sole feature that distinguishes the method of claim 1 over the method of example 3 is the type of acid used in the acidic cleaning step (amidosulfonic acid is not in the list of acids recited in claim 1).

- 1.2.6 According to the description (WO 2012/160497 A2) of the invention, the problem underlying the application is the provision of a dishwashing method that has usage and/or environmental benefits (page 2, line 3-12 of the description). In particular, it is disclosed on page 2, line 19 - 24 that by using cleaning agents which are free of phosphates and silicates, detergent usage as well as the tendency to film-building can be reduced.

However, as correctly concluded by the examining division, these effects cannot be relied upon when starting from example 3 of D1 because as set out above, the chemicals used therein are already free of phosphates or silicates. Other effects caused by the

distinguishing feature, namely by using an acid other than sulfamic acid, are not shown.

In this context, the appellant argued that example 2 (page 58-59) and the passage on page 52, line 16-25 of the application showed an effect resulting from the selection of the acid, because a mixture of nitric and citric acid (Lime-A-Way) performed better than phosphoric acid, both in terms of filming and detergent usage.

The board can however not follow the above argument. Firstly, it is noted that example 3 of D1 does not use phosphoric acid so that example 2 of the application does not provide a comparison with the closest prior art. Secondly, said example shows at most an effect for the specific acid mixture "Lime-A-way" but not for the claimed invention in general, which encompasses many embodiments that use neither citric nor nitric acid. Other parts of the application do not support an effect resulting from the selection of one of the claimed acids over sulfamic acid either because in the passage where the acids are mentioned (page 4, line 14 - 16), it is taught that sulfamic acid and the acids recited in claim 1 are equivalent.

For these reasons, the problem to be solved can only be seen as the provision of an alternative dishwashing method.

- 1.2.7 The appellant formulated the problem more ambitiously but this argument is based either on the assumption that example 3 was not a valid starting point or that the claimed invention was distinguished by further features from said example. Both assumptions are not

followed for the reasons given above.

- 1.2.8 With regard to the problem of providing an alternative method, the solution proposed in claim 1 is obvious because D1 teaches in paragraph 0179 that other acids, such as citric acid or nitric acid can be used as an alternative to the acid of example 3. Therefore, when trying to provide an alternative to the method of example 3, the replacement of sulfamic acid with any one of the acids mentioned would be an obvious measure for the skilled person.

Moreover, it would also be obvious to replace the sulfamic acid with the mixture of sulfamic and citric acid that is disclosed in paragraph 0179 as preferred, and by doing so, the skilled person would also arrive at the claimed subject-matter.

In this context, it is noted that, while claim 1 certainly requires the presence of one of the acids listed therein as first acidic cleaning agent, it does not exclude the presence of further acids other than phosphoric acid which is explicitly disclaimed. This is because the claim does not contain a precedent for the term "the acid". As any patent claim has to be interpreted broadly within what is technically plausible and reasonable, this must be taken to mean that beside the method comprising the (first) acidic cleaning agent further acids being included therein are possible. It follows that a method comprising the application of one of the acids mentioned in the claim, namely citric acid, and in addition thereto sulfamic acid, is encompassed by claim 1.

- 1.2.9 The appellant argued that paragraph 0179 of D1 also taught that phosphoric acid could preferably be used.

However, this argument is not convincing because, for an alternative to be obvious, it is not necessary that said alternative is the only alternative available. In the present case, a method according to claim 1 is an obvious alternative to the method of example 3 of D1 for the reasons given above. The fact that using phosphoric acid instead of sulfamic acid might also be regarded as another obvious measure does not render the alternatives discussed above and falling into the scope of the claim non-obvious. Moreover, the use of a mixture of citric acid and sulfamic acid is also preferred according to paragraph 0179 of D1, so that no general teaching to apply phosphoric acid can be inferred from the paragraph.

The appellant also argued that the other examples of D1 would not render the subject-matter of claim 1 obvious, so that starting from example 3 would amount to an unallowable ex post facto analysis. However, this is not convincing because it is not exceptional but rather the norm that the subject-matter of a claim is only rendered obvious by some pieces of the available prior art.

1.2.10 For these reasons, the subject-matter of claim 1 does not involve an inventive step so that the main request is not allowable (Article 56 EPC).

2. Auxiliary request 1

2.1 The first auxiliary request was already filed in the first instance proceedings, so there is no reason to address the question of its admittance.

2.2 Claim 1 of the first auxiliary request corresponds to claim 1 of the main request whereby all acids other than citric acid, nitric acid and mixtures thereof have been deleted in the group of acids.

2.3 No effects result from using these particular acids. While the appellant has repeatedly referred to example 2 as showing that employing "Lime-A-Way", i. e. mixture of nitric and citric acid (D6) had beneficial effects, no such effects are shown or have been invoked for citric or nitric acid alone. Therefore, the problem to be solved is still the provision of an alternative cleaning method for the reasons as set out with regard to the main request.

2.4 The subject-matter of claim 1 does not involve an inventive step because, as set out in item 1.2.8, the replacement of sulfamic acid with either nitric or citric acid or with a mixture of sulfamic and citric acid is an obvious measure in view of the problem to be solved. Therefore, the skilled person would arrive at the claimed subject-matter without having to exercise any inventive skills (Article 56 EPC).

### 3. Auxiliary request 2

3.1 The second auxiliary request was also filed in the first instance proceedings, so there is no reason to address the question of its admittance.

3.2 Claim 1 of the second auxiliary request corresponds to claim 1 of the main request, with the additional requirement that the method is also for reducing detergent usage.

3.3 The subject-matter of claim 1 is not inventive for the same reasons as laid out with regard to the main request, because the newly added feature is vague and relative and therefore unsuitable to distinguish the claimed subject-matter from the disclosure of example 3 of D1.

The appellant argued that the added effect was also relevant for methods where the alkaline and acidic agents were applied in a tablet, since the amount of detergent could be reduced compared to a tablet containing phosphates. However, example 3 of D1 does not contain any phosphates. Moreover, the claim does not define the benchmark in comparison to which the amount of detergent is to be reduced. Therefore, the feature "reduced amount" is meaningless and cannot distinguish the claimed subject matter from D1.

3.4 The requirements of Article 56 EPC are therefore not met.

4. Auxiliary request 3

4.1 This request was filed for the first time with the grounds of appeal. As the request is not allowable under Article 56 EPC, see below, there is no need to discuss Article 12(4), (6) RPBA 2020.

4.2 Claim 1 of the third auxiliary request corresponds to claim 1 of the main request wherein step (a) has been further limited by the addition of the feature "*wherein an alkaline carrier is present in the diluted, ready to use, alkaline composition from 125 ppm to 5000 ppm*" and step (b) has been further limited by the addition of the feature "*wherein an acid is present in the diluted,*



*ready to use, acidic composition from 0.01 wt.% to 1 wt.%".*

- 4.3 The subject-matter of claim 1 does not involve an inventive step because no specific effect is associated with these features and both ranges are disclosed in paragraph 0040 and 0179 of D1, so that the added features cannot distinguish the claimed subject matter from the disclosure of example 3 of D1.

The appellant has pointed out that the features are not disclosed in the example itself but only in the description. However, this argument is not convincing because the skilled person would read the example in the context of the description and would select the amounts of hydroxide and acid and/or the amount of water used in one cleaning cycle so that the concentration in the ready to use cleaning liquid would be set on the preferred levels.

- 4.4 The requirements of Article 56 EPC are therefore not met.

5. Auxiliary request 4

- 5.1 Claim 1 of the fourth auxiliary request corresponds to claim 1 of the first auxiliary request limited to the acid being a mixture of citric and nitric acid.

- 5.2 This request was filed after the notification of the summons to oral proceedings so that Article 13(2) RPBA is applicable. The new request is an amendment to the appellant's appeal case. Compared to the requests filed with the appellant's grounds, the subject matter of claim 1 is no longer directed to a group of several

acids or mixtures thereof. Rather, the mixture of two specific acids selected from a previous group consisting of more than 25 acids is claimed.

- 5.3 The appellant argued that the request was a reaction to the preliminary opinion of the board regarding the first auxiliary request and the board's interpretation that claim 1 allowed the presence of further (non phosphoric) acids beside those explicitly mentioned.

However, in the context of the three stage convergent approach, the criteria as set out for the admittance of an amendment in the first and second level (Article 12(4) and 13(1) RPBA) can also be applied (Case law of the Boards of Appeal, 10th edition, V.A.4.5.9, page 1434 f; RPBA 2020 with explanatory remarks, OJ Suppl 2/2020, page 226). Thus, the board can also exercise its discretion not to admit an amendment based on Article 13(1) RPBA 2020. One criterion under Article 13(1) RPBA is that the amendment prima facie does not give rise to new objections (Article 13(1) fourth sentence RPBA 2020)).

- 5.4 The board has exercised its discretion under Article 13(1) RPBA not to admit the request into the proceedings because it gives rise to an objection under Article 123(2) EPC.

The appellant has argued that the claimed mixture of nitric and citric acid was disclosed in example 2 of the application and that no further features needed to be incorporated into the claim pursuant to Article 123(2) EPC.

In that example the commercial detergent "Lime-A-Way" is used together with other ingredients and in a

specific method which is not reflected in the amended claim.

According to the data sheet D6 submitted by the appellant, "Lime-A-Way" is a mixture of 10-30 % of nitric acid and 1-5 % of citric acid. Therefore, D6 does not disclose mixtures of citric and nitric acid in general but rather a specific mixture having a defined ratio of the two acids where nitric acid is the major component. In contrast, claim 1 merely requires a mixture of nitric and citric acid so that the ratio of the acids is undefined. There is however no basis, neither in the application nor in D6, for such a generalisation.

Moreover, example 2 of the application discloses that Lime-A-Way was used in combination with the specific phosphate free alkaline detergent Solid Power LP, which is not specified in claim 1 of auxiliary request 4.

It is also noted that example 2 deals exclusively with cleaning methods where the alkaline and acidic cleaning agents are dispensed separately and the dosing of the alkaline detergent is controlled by conductance measurement. Also this aspect has been omitted.

Similar arguments apply to examples 1 and 4 which also employ Lime-a-Way. Moreover, in these methods a phosphate containing alkaline cleaning agent is used.

As the request is therefore prima facie not allowable under Article 123(2) EPC, it is not admitted (Article 13(1) RPBA).

6. Auxiliary request 5

- 6.1 Claim 1 of the fifth auxiliary request corresponds to claim 1 of the main request, wherein the dish machine has been limited to *"an institutional dish machine that uses conductance measurements to deliver detergent."*
- 6.2 This request was filed after the notification of the summons to oral proceedings so that its admittance into the proceeding is governed by Article 13(2) RPBA which stipulates that at this stage of the proceedings, amendments shall, in principle, not be taken into account unless there are exceptional circumstances which have been justified with cogent reasons by the party concerned.
- 6.3 The board has exercised its discretion under Article 13(2) RPBA not to take this request into account as exceptional circumstances which would justify to admit the request into the proceedings are not discernible.
- 6.4 In its letter dated 4 May 2022, the appellant merely stated that the request was filed to support its argumentation with respect to inventive step of the main request. During the oral proceedings, the appellant brought forward that auxiliary request 5 represented a reaction to the preliminary opinion of the board concerning auxiliary request 2, in which the board had argued for the first time that it considered the added feature "and reducing detergent usage" to be vague and relative and therefore not limiting. Claim 1 had been amended in order to render this effect more concrete.
- 6.5 However, the board has not presented a new objection against auxiliary request 2 which might have justified the filing of a new request. Rather, already in the contested decision, the examining division held that

the subject-matter of claim 1 of the main request was rendered obvious by example 3 of D1 read in combination with claim 20 (corresponding to paragraph 0179) and that in essence the same arguments applied to the second auxiliary request. In its preliminary opinion, the board merely reiterated this objection. The fact that the board qualified the feature "*and reducing detergent usage*" as "vague and relative" cannot be seen as a new objection, in particular in view of the fact that this finding merely leads to the conclusion that the feature cannot further distinguish the claimed subject-matter from example 3 of D1, i. e. to the same conclusion already drawn by the examining division.

6.6 Furthermore, the appellant's amendment cannot be regarded as an attempt to overcome the objection of the board against the auxiliary request 2 as that would have required a further limitation of said request, rather than the replacement of the feature added to auxiliary request 2 by a completely different feature that was taken from the description and never formed part of the claimed subject-matter before. Therefore, auxiliary request 5 does not further limit the second auxiliary request but rather the main request. This finding is in line with the reasons given by the appellant itself in the submission dated 4 May 2022, where it set out that the request was filed in order to further distinguish the main request from the disclosure of example 3 of D1.

6.7 This is however not a valid reason for filing the request at this stage of the proceedings, because the objection based on example 3 of D1 that led to the main request being found not allowable had already been set out in the preliminary opinion of the division (point 3.2.2). Therefore, any request attempting to overcome

this objection could and should have been filed already in the first instance proceedings.

6.8 Moreover, the request is not convergent with the higher ranking auxiliary requests. It is noted that the contested decision is based on only one objection, namely the objection under Article 56 EPC starting from example 3 of D1. Yet, auxiliary requests 3-5 do not limit the claimed subject-matter in a convergent way but each request adds new limitations while abandoning the limitations made in the higher ranking requests, which is detrimental to procedural economy. This a further reason for not taking into account auxiliary request 5.

## Order

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

The appeal is dismissed.

The Registrar:

The Chairwoman:



A. Pinna

J. Hoppe

Decision electronically authenticated