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Datasheet for the decision of 21 October 2024

Case Number: T 0331/22 - 3.3.06

Application Number: 13858455.2

Publication Number: 2925848

IPC: C11D3/37, C11D1/86, C11D17/00

Language of the proceedings: EN

Title of invention:
FOAM STABILIZATION WITH POLYETHYLENEIMINE ETHOXYLATES

Patent Proprietor:
Ecolab USA Inc.

Opponent:
BASF SE

Headword:
Foam stabilisation/ECOLAB

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

Keyword:
Inventive step - obvious alternative
Amendments - allowable (no) (Auxiliary requests 4 and 5)

Decisions cited:

Catchword:

Europäisches Patentamt
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Beschwerdekammern

Boards of Appeal

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Case Number: T 0331/22 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 21 October 2024

Appellant: (Opponent)	BASF SE Carl-Bosch-Str. 38 67056 Ludwigshafen (DE)
Representative:	Eisenführ Speiser Patentanwälte Rechtsanwälte PartGmbB Postfach 10 60 78 28060 Bremen (DE)
Respondent: (Patent Proprietor)	Ecolab USA Inc. 1 Ecolab Place St. Paul, MN 55102 (US)
Representative:	Godemeyer Blum Lenze Patentanwälte Partnerschaft mbB - werkpatent An den Gärten 7 51491 Overath (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 1 December 2021 rejecting the opposition filed against European patent No. 2925848 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	R. Elsässer
	C. Heath

Summary of Facts and Submissions

I. The appeal of the opponent lies from the decision of the opposition division to reject the opposition, *inter alia* because granted claim 1, which reads as follows, involved an inventive step over **D1** (EP 2 014 753 A1):

"1. A foaming cleaning composition comprising:
a positively charged PEI polymer;
a detersive amount of a surfactant, said surfactant comprising an anionic surfactant and an amine oxide;
and said composition having less than 0.5 wt.% of cocamide DEA, wherein said amine oxide is present in an amount of less than 8 wt-% actives."

II. With the grounds of appeal, the appellant filed new documents **D4**, **D5**, **ES2**, **ES2a**, **ES2b**, **ES2c**, **ES2d**, **ES2e** and **ES3** and maintained that granted claim 1 lacked an inventive step over **D1**.

III. With its reply, the proprietor and respondent filed declarations **D6** and **D7** as well as **four auxiliary requests**.

IV. In a further submission, the appellant filed new documents **ES5**, **ES5a**, **ES6**, **D8** and **D9**.

V. Subsequently, the board summoned the parties to oral proceedings in person on 23 September 2024 and issued its preliminary opinion.

VI. Thereafter, the appellant filed a further submission in which it argued that none of the auxiliary requests 1-4 involved an inventive step.

VII. With submission of 22 July 2024, the respondent filed **auxiliary request 5**.

VIII. In a further submission, the appellant argued that auxiliary request 5 was not inventive.

IX. With letter dated 17 September 2024, the respondent requested to postpone the oral proceedings. These were rescheduled, however, by videoconference.

X. The respondent, however, requested the oral proceedings to be held in person and the appellant argued that this request should be refused. The board finally refused the request to conduct the oral proceedings in person.

XI. At the oral proceedings, held on 21 October 2024 by videoconference, the final requests of the parties were established as follows:

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

The **respondent** requested that the appeal be dismissed, or as an auxiliary measure, that the patent be maintained in amended form based on one of auxiliary requests 1 to 4 filed with the reply to the grounds of appeal, or of auxiliary request 5 filed with letter dated 22 July 2024.

Reasons for the Decision

1. Format of the oral proceedings

Pursuant to Article 15a RPBA, the Board may decide to hold oral proceedings by videoconference, if it

considers it appropriate to do so, either upon request by a party or of its own motion. In other words, whether or not oral proceedings are held in person or not is at the discretion of the board.

In the case at hand the oral proceedings initially scheduled as an in-person hearing were postponed at the request of the appellant. Since finding a new date on short notice is easier for a videoconference than for an in-person hearing because no travel arrangements are necessary, this aspect was of particular importance in the current case because various participants from different locations had been announced to attend the hearing. Therefore the Board exercised its discretion to conduct the oral proceedings by videoconference. It is noted that this decision was no longer contested by the respondent.

2. Claim interpretation

At the oral proceedings, the appellant argued for the first time that the feature "*positively charged PEI polymer*" in claim 1 at issue should be read narrowly, namely as referring only to permanently charged polymers or in other words to PEIs that were at least partially quaternised. Initially neutral PEIs which became charged only upon protonation were in appellant's view not covered.

The board cannot accept this argument because the term "charged" as defined in the claim is open and so, includes permanent and non-permanent charges. Moreover, the disclosure in [0044] of the patent, where the degree of protonation and thereby the degree of charging of PEIs is discussed, supports this broad reading, rather than the narrow interpretation

suggested by the appellant.

The board observes that the inventive step objection set out below would anyway be valid if the narrow interpretation were to be adopted.

3. Main request - Inventive step

The board has come to the conclusion that the subject-matter of claim 1 as granted lacks an inventive step for the following reasons.

3.1 The invention is directed to foaming cleaning compositions.

3.1.1 **D1**, that according to the parties represents a suitable starting point for assessing inventive step, is - like the invention - directed to sudsing, i.e. foaming, dishwashing detergents.

3.1.2 The respondent disputed that it was appropriate to start from the concrete compositions of table 1 of **D1**, as proposed by the appellant, because such a selection would be based on hindsight. Rather, the skilled person would use as the starting point the complete disclosure of **D1**, which had another aim as the contested patent, namely the provision of a detergent composition with a lower pH and having excellent cleaning, suds and reduced slipperiness. Moreover, the general part of **D1** did not exclude the use of cocamide DEA but taught that diethyl amides of fatty acids could be used as an optional non-ionic surfactant in an amount up to 20 %.

3.1.3 These arguments do not convince the board because an example is a preferred embodiment of an invention, which therefore forms a particularly suitable starting

point for the assessment of inventive step, at least when it is representative of the general teaching of the document, which is the case for all the compositions in table 1 in **D1**.

It is correct that D1 also discloses embodiments that optionally include a group of compounds which conceptionally includes cocamide DEA, although the compound is not mentioned explicitly in the document. However these alternative embodiments are further away from the claimed invention, so that it follows from the rationale of the problem-solution approach to select the embodiments of table 1, which are closer. As the selection of the closest prior art is always done in the knowledge of the invention and with the goal of identifying the most promising springboard, the objection of the respondent that the selection of the specific embodiments in table 1 was based on hindsight is moot.

It follows that the board considers the compositions of table 1, including composition B, which contains a suds boosting polymer, to represent the closest state of the art.

3.2 According to footnote 4 of said table, these compositions contain an alkoxylated PEI "*such as the ones exemplified in examples 1-4*", which in turn are described on pages 4-6 of **D1**. Of these, only the PEI of example 3 is partially quaternised and thereby explicitly disclosed as being charged.

By giving the respondent the benefit of the doubt in the assumption that, due to the formulation "such as", it is not unambiguously disclosed that the PEI of example 3 is actually used in the examples, and by

further not considering the appellant's argument of an implicit disclosure of the feature "charged" in examples 1, 2 and 4, the board comes to the conclusion that the claimed subject-matter is distinguished over the compositions in table 1 of D1 in that the PEI polymer is positively charged.

The respondent identified a second distinguishing feature, namely a content of cocamide DEA of less than 0.5 wt.%. However, this argument is based on the respondent's assessment that the general and broadest teaching of **D1** should be considered as the closest prior art instead of the compositions of table 1. However, for the reasons set out above, this argument is moot.

The respondent's further argument that the table did not report the amounts of amine oxide actives is not convincing either, since the amount of actives is always lower than the actual amount of amine oxide added.

3.3 In a next step, the problem to be solved needs to be identified.

3.3.1 According to the patent, the invention aims at providing a foam stabiliser that can serve as a replacement to cocoamide DEA and which is safe, environmentally friendly and economically feasible.

Based on the examples of the patent, which allegedly show improvements compared to three commercial products, the respondent formulated the problem more ambitiously, namely as the provision of a composition having enhanced foam stability while containing only a

minor concentration of cocamide DEA.

3.3.2 The board is of the opinion that none of said commercial products is representative of the compositions of table 1 of **D1**, so that the effects observed in comparison to these commercial products cannot be used to formulate the problem to be solved.

In particular, with respect to commercial product 3, it is not disputed that it does not contain any PEI, let alone alkoxylated PEI, so that it is not representative at all of the closest prior art.

With regard to commercial products 1 and 2, it is disclosed in [0017] of the patent that both contain "PEI-14 PEG-10/PPG-7".

The meaning of this abbreviation is neither explained in the patent nor could the respondent provide a clarification at the oral proceedings.

The board notes that PEG and PPG are however commonly used abbreviations for polyethylene glycol and polypropylene glycol, so that it would appear that the two compositions contain mixtures of polyethylene imine (PEI) and PEG/PPG, rather than an alkoxylated PEI. In any case, whether this interpretation is correct or not, what matters is that the term "PEI-14 PEG-10/ PPG-7" apparently does not refer to alkoxylated PEI polymers because the patent explicitly mentions these compounds in various passages (see e.g. [0011], [0162], claim 2), so that it must be concluded that something else is meant when another term is used.

It follows that commercial products 1 and 2 do not directly and unambiguously contain alkoxylated PEI and

are therefore not representative for the teaching of **D1**. Instead, they contain PEG-10/PPG-7 which, whatever the abbreviations might stand for, is apparently not contained in the compositions of **D1**, which is another difference to these compositions. For this reason alone, the board concludes that commercial products 1 and 2 are not representative of the closest prior art compositions.

As no effect in comparison to the closest prior art has been shown, the problem to be solved is merely the provision of an alternative cleaning composition providing good sudsing.

3.4 The appellant pointed out that **D1** was not concerned with foam stability and in particular this document did not disclose any measurements of the foam stability. Rather, D1 was directed to another problem, namely improving the stability of the composition at low pH values. In this context, it pointed out that the phrase "They provide excellent cleaning and suds profile" in [0004] of the patent does not necessarily mean that the suds profile was excellent, since the term "excellent" could also refer to the cleaning performance only and not to the suds profile. Moreover, [0006] of **D1** discloses that suds profile means either a high or a low amount of sudsing.

The board is thus of the opinion that the content of [0004] and [0006] of **D1** is to be understood that the detergent compositions of the invention in D1 provide a suds profile that involves high and persistent sudsing. Therefore, **D1** is at least also concerned with the stability (persistence) of the foam.

This applies in particular to composition B which

contains a suds boosting polymer (footnote 6) that, according to [0053] of **D1**, provides "*extended suds volume and suds duration*". The respondent argued that since only one of the compositions in table 1 contains the suds stabiliser, this showed that foam stability was not the focus in **D1**. However, this is not convincing the board, because at least composition B is obviously designed to have a good suds profile, which shows that this aspect was considered by the authors of the document. It can also be noted that the means to achieve this goal do not include the addition of cocamide DEA, which again confirms the board's conclusion that the composition is a suitable starting point.

3.5 Moreover, even if the respondent's allegation - that **D1** aimed at solving a different problem and did not mention foaming or foam stability - was correct, this would not mean that the compositions disclosed therein did not foam or that the foam stability of the claimed compositions was better.

According to the established jurisprudence of the boards, for an effect to be used as the basis for the problem to be solved, it needs to be shown that the effect is observed in comparison with the closest prior art. The fact that the effect is not mentioned or measured in the closest prior art D1 is however not sufficient to conclude that it is absent therefrom.

3.5.1 Referring to the board's preliminary opinion, the respondent also argued that "*...the request of the Board that the respondent should file comparative examples based on document **D1** results from an inadmissible ex post view, namely the fact that the person skilled in the art already knows that PEI can be*

used for enhancing the foam stability as a replacement for cocamide DEA."

The board in this respect observes that it did not request any experiments to be carried out, but merely noted that the evidence on file was not sufficient to conclude that an effect was achieved compared to the closest prior art **D1**. In practice, it frequently happens that an effect shown in comparison with a specific piece of prior art known to drafter of the application is no longer credible in comparison with a newly discovered piece of prior art. In such a case, it is then up to the proprietor to decide whether new data are to be filed or not. In any case, considering a new piece of prior art in the context of the problem-solution approach and reformulating the problem to be solved accordingly has nothing to do with an "inadmissible ex post view", as argued by the respondent.

3.5.2 It follows from the above considerations that the board does not see any evidence for an effect arising from the feature distinguishing the claimed subject-matter from D1, so that the question whether the effect relied upon by the respondent would occur over the entire range claimed is moot.

Thus, the problem to be solved with respect to D1 is to be reformulated in less ambitious terms, namely in the provision of an alternative cleaning composition which provides excellent sudsing.

3.6 As a solution to this problem, the patent proposes a composition with the PEI-polymer being positively charged.

3.7 As to the question whether or not this solution is obvious for the skilled person faced with the above-mentioned problem, the board notes that **D1** itself discloses various examples of suitable PEI-polymers, with the one in example 3 being partially quaternised and thus permanently positively charged, and so by selecting this particular PEI-polymer, the skilled person arrives directly at the subject-matter of claim 1 at issue without having to exercise any inventive skills.

3.7.1 The respondent argued that the skilled person would not select the positively charged PEI of example 3 because undesirable interactions with the anionic surfactants were to be expected. This is however not convincing, because no such interaction is mentioned in **D1**, nor is there evidence for common general knowledge about such interactions. Moreover, even if such knowledge existed, the skilled reader of document **D1** immediately notes that the different PEIs disclosed therein - quaternised or not - are equally suitable in the context of the invention therein described, so that there is no reason for the skilled person to avoid the specific PEI disclosed in example 3.

The board concedes that it would also be obvious to select the alternative uncharged PEI polymers disclosed in the other examples of D1. That alternative obvious solutions which do not lead to the invention are also available does however not mean that a solution that leads in an obvious way to the invention, namely the positively charged PEI polymer of example 3, would not be obvious.

3.8 It follows from the above considerations that the subject-matter of claim 1 at issue is obvious from the

known prior art for the skilled person, and so lacks an inventive step within the meaning of Article 56 EPC.

4. Auxiliary request 1 - inventive step

In claim 1 of this request, the feature *"wherein the amine oxide is a C10-C18 alkyldimethylamine oxide or a C8-C12 alkoxyethyldihydroxyethylamine oxide"* has been added.

A technical effect resulting from this additional feature has however neither been alleged nor shown. Therefore, the problem to be solved over D1 is still the provision of an alternative composition.

The compositions disclosed in table 1 of D1 are simply defined to contain C_{10}-C_{14} amine oxide, with two substituents of the N-atom being thus undefined. However, the skilled reader would arrive at the claimed subject-matter without having to exercise any inventive skills, because both claim 8 and paragraph [0032] in **D1** disclose that methyl substituents are preferred. As these passages provide the information that is manifestly missing from the more general disclosure of table 1, no particular pointer is necessary for the skilled person to consider this disclosure of **D1**. It follows that the above added feature does not provide any inventive contribution with respect to the subject-matter of claim 1 of the main request, so that for substantially the same reasons, also claim 1 of the first auxiliary request lacks an inventive step within the meaning of Article 56 EPC.

5. Auxiliary request 2

In claim 1 of this request, the PEI polymer is

specified to be "ethoxylated".

This claim lacks inventive step for the same reasons as set out for the main request because the PEI of example 3 is also ethoxylated (and propoxylated).

The respondent argued that the claim should be understood as referring to PEI-polymers that contain only ethoxy- (and no propoxy-) groups. However, the board sees no reason for this unjustifiably narrow interpretation, because an ethoxylated polymer is one that contains ethoxy groups, without however excluding the presence of any other group or functionality.

Therefore, auxiliary request 2 does meet the requirements of Article 56 EPC.

6. Auxiliary request 3

Claim 1 of this request combines the amendments of auxiliary requests 1 and 2.

No particular synergy or effect results from these features, be it alone or in combination with other features of the claim. Therefore the request does not meet the requirement of Article 56 EPC for the same reasons as the higher ranking requests.

7. Auxiliary request 4

Claim 1 of this request reads as follows:

"1. Use of a cleaning composition as a foam stabilizer/ ~~A foaming~~, the cleaning composition comprising: a positively charged PEI polymer; a detersive amount of a surfactant, said surfactant comprising an anionic

surfactant and an amine oxide; and said composition having less than 0.5 wt. % of cocamide DEA, wherein said amine oxide is present in an amount of less than 8 wt-% actives."

7.1 Claim interpretation

At the oral proceedings, the meaning of the expression "*use of a cleaning composition as a foam stabilizer*" was discussed.

The appellant pointed out that a foam stabiliser was a compound which was supposed to stabilise a foam. Since the application as filed did not disclose that the cleaning composition was used in this way, this was added matter.

For the respondent, the claim should be understood in the sense that the cleaning composition is used to produce a stable foam and is thereby stabilising its own foam.

7.2 Inventive step

Based on the above understanding of the claim, the board has come to the conclusion that it lacks inventive step for the following reasons.

As set out above, composition B disclosed in table 1 of D1 is a liquid dishwashing, i.e. a cleaning, composition which contains a suds boosting polymer. According to [0053] of D1, such a polymer provides extended suds volume and suds duration. This ties in well with the disclosure of [0006] of D1, according to which liquid dishwashing compositions, such as those disclosed in table 1, require high sudsing and

sustained suds. Thus **D1** discloses already the use of a cleaning composition as a foam stabiliser, in the sense that a stable foam is produced by the cleaning composition, whereby the only feature not explicitly disclosed is that the PEI polymer is positively charged.

For the reasons set out above for the main request, no technical effect results from this difference so that the problem to be solved can be formulated as the provision of an alternative use.

Claim 1 of auxiliary request 4 proposes to solve this problem by using a cleaning composition comprising a charged polymer but for the same reasons as set out above for the main request, this solution is obvious for the skilled person starting from composition B and using the PEI-polymer of example 3.

The respondent argued that **D1** did not teach or disclose that the charged PEI-polymer functions as a foam stabiliser. This is correct but is not relevant in the context of auxiliary request 4 because claim 1 is not directed to the use of a charged PEI as a foam stabiliser but to the use of a composition that includes such a polymer.

The respondent further pointed out that **D1** did not disclose that the foam stability is assessed with the specific method disclosed in the patent that involves the addition of soil. This is correct but also not relevant in the present context, since claim 1 at issue is not limited to any particular method of measuring foam stability. Moreover, [0006] of **D1** clearly teaches that not only the initial suds profile but also the suds profile in use, i.e. after the addition of soil,

is considered in the document.

7.3 Article 123(2) EPC

If claim 1 at issue were to be interpreted as proposed by the respondent, namely that the cleaning composition is used to produce a stable foam and is thereby stabilising its own foam, its subject-matter does not meet the requirements of Article 123(2) EPC, since the application as filed distinguishes between *foam stabilizing* compositions and *cleaning* compositions.

Furthermore, according to page 1, lines 5-8, the invention relates to *foam stabilizing* compositions for use in *cleaning* compositions. This is confirmed by page 2, lines 9-10, which discloses that one object of the invention is to provide a foam stabiliser that can be used as a replacement for cocoamide DEA which, according to page 1, lines 15-21, is used as a foam stabiliser in cleaning compositions.

Hence the application as filed discloses foam stabilising compositions, their use in the formation of cleaning compositions and the resulting cleaning compositions. In contrast, there is no disclosure of a use of the cleaning composition as a foam stabiliser.

The respondent referred to page 1, line 5; page 2, line 17 and claim 1; however, these passages relate to different things, namely the stabilising compositions on the one hand and the cleaning compositions on the other hand, and therefore cannot be combined. It follows that there is no direct and unambiguous disclosure in the application as filed for the subject-matter of claim 1 at issue, which thus infringes

Article 123(2) EPC.

8. Auxiliary request 5

Claim 1 of this request is based on claim 1 of auxiliary request 4, whereby the term "foaming" has been added to the preamble of the claim, which reads "Use of a foaming cleaning composition ...".

This amendment was introduced in reaction to an objection under Article 123(3) EPC and the respondent confirmed that it has no impact on the assessment of the other issues at stake, which is also the view of the board.

Therefore, the board has come to the conclusion that auxiliary request 5 is not allowable under Articles 56 and 123(2) EPC, for the same reasons set out in the context of auxiliary request 4.

9. As none of the respondent's request is allowable, the appeal of the opponent succeeds.

10. As this decision is not based on any of the new documents filed by the parties in the appeal stage, no decision must be taken on the respective requests not to admit these documents into the proceedings.

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. Wille J.-M. Schwaller

Decision electronically authenticated