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**Datasheet for the decision
of 12 December 2023**

Case Number: T 0129/21 - 3.3.06

Application Number: 15726277.5

Publication Number: 3149141

IPC: C11D3/33, C11D3/40, C11D3/37,
C11D17/00, C11D17/04, C11D7/32

Language of the proceedings: EN

Title of invention:
Improved detergent composition

Patent Proprietor:
Reckitt Benckiser (Brands) Limited

Opponent:
Henkel AG & Co. KGaA

Headword:
Automatic dishwashing composition/RECKITT

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

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Case Number: T 0129/21 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 12 December 2023

Appellant: Henkel AG & Co. KGaA
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 14 December
2020 rejecting the opposition filed against
European patent No. 3149141 pursuant to Article
101(2) EPC.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: L. Li Voti
R. Cramer

Summary of Facts and Submissions

I. The opponent's appeal is against the decision of the opposition division to reject the opposition against European patent no. 3 149 141, granted with a set of 15 claims including the following four independent claims:

*"1. An aqueous gel or liquid detergent composition, comprising:
5 to 60 wt% of an aminocarboxylate builder; a dye;
10 to 70% wt% water; and polyalkyleneimine; wherein the polyalkyleneimine is present in an amount of less than 0.05 wt% of the composition; wherein the composition is an automatic dishwashing composition."*

"12. A product comprising the detergent composition as claimed in any of the preceding claims, provided in a water-insoluble container."

"14. A method of automatic dishwashing, comprising supplying a composition as claimed in any of claims 1 to 11 to an automatic dishwashing machine, and washing wares in the machine using the composition."

"15. Use of a polyalkyleneimine in a detergent composition comprising an aminocarboxylate builder and a dye to prevent degradation of the dye."

II. With its grounds of appeal the appellant argued that the subject-matter of above claim 1 lacked novelty over **D1** (WO 2014/161786 A1) and inventive step starting from **D1** or **D2** (GB 2505734 A) as closest prior art. The following documents were also cited:

D3: Experimental Report, annexed to the notice of opposition of 04.09.2019

D4: WO 2010/020765 A1

D9: Hönle UV Technology: "*Simulation natürlicher Sonnenstrahlung*"

D10: Declaration by Mrs Schmeling dated 30.07.2020.

III. In its reply the patent proprietor (now respondent) defended the patent as granted and referred inter alia to **D5** ("*A comparative study on the aqueous photodegradation of two organophosphorous pesticides under simulated and natural sunlight*", J. Weber et al., J. Environ. Monit. 2009, 11, 654-659) and **D6** ("*Epoxyresins: From industrial material to contemporary art medium*", M. Lazzari et al., Science Technology and Cultural Heritage, 2014, pages 171-172). It also filed three sets of amended claims as auxiliary requests 1 to 3.

IV. At the oral proceedings held on 12 December 2023 the parties' final requests were the following:

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 on the basis of the claims according to one of auxiliary requests 1 to 3, submitted with the reply to the statement of grounds of appeal.

Reasons for the Decision

1. Main request (patent as granted) - Novelty
 - 1.1 Claim 1 at issue relates to an aqueous gel or liquid automatic dishwashing composition comprising:
 - (a) 5 to 60 wt% of an aminocarboxylate builder;
 - (b) a dye;
 - (c) 10 to 70% water; and
 - (d) polyalkyleneimine in an amount of less than 0.05 wt% of the composition.
 - 1.2 The board finds for the following reasons that document D1 does not disclose directly and unambiguously a composition having all these features.
 - 1.2.1 Claim 1 of D1 discloses a composition (which can be used for automatic dishwashing as stated in claim 8) comprising inter alia 1-50 wt% of MGDA (an aminocarboxylate builder), and 0.001-0.045 wt% of an ethyleneimine homo/copolymer (polyalkyleneimine), all percentages being based on the solids content of the composition. Whilst the amount of polyalkyleneimine falls within the limits of feature (d) above, the lower limit of the MGDA concentration is clearly outside the range of feature (a). Moreover, even though the compositions of D1 (page 6, lines 30-34) may be liquid, solid or a gel, claim 1 does not disclose whether it is an aqueous gel or liquid, nor that it contains any water (feature (c)) or a dye (feature (b) of claim 1 at issue).
 - 1.2.2 Claim 6 of D1 relates to a composition according to the preceding claims 1 to 5 comprising 0.1-10 wt% water, thus disclosing in the appellant's view an aqueous

composition comprising an amount of water corresponding to the lower limit (10 wt%) of feature (c).

The board notes that it is established jurisprudence (see Case Law of the Boards of Appeal, 10th edition, July 2022, chapter I.C.4.1) that in evaluating the novelty of a prior art disclosure, each part of the cited document has to be construed **in the context of the contents of the document as a whole**. The description of D1 (page 6, lines 30-38) teaches in this respect that the compositions may be in solid, liquid or gel form and **may contain 0.1-10 wt% of water, based on the solids content of the formulation**, whilst liquid formulations (page 15, lines 36-37) may comprise **water amounts in the range of 35-90%**, the reference base for this concentration not being specified.

Therefore, in view of this disclosure, the amount of 0.1-10 wt% water in claim 6, referring back to claim 1, can only be understood as being based on the solids content of the composition, like the percentages reported in claim 1, the amount of water being thus necessarily less than 10% by weight in the total formulation and thus outside the limits of claim 1 at issue.

- 1.2.3 The combination of claim 6 with claim 1 thus does not disclose feature (c) of claim 1 at issue, and already for this reason cannot take away the novelty of claim 1 at issue.
- 1.2.4 The appellant further argued that the disclosure of D1 (page 15, lines 32-34) that liquid formulations can contain 35-90% of water could be read in the composition of claim 1 discussed above.

- 1.2.5 The board notes that even accepting for the argument's sake that the above amount of water is based on the overall composition, and that claim 1 of D1 relates to a liquid composition having such a water content, the amount of 90% by weight would nevertheless be outside the range of claim 1 at issue (10 to 70 wt%) and the amount of MGDA could still be 1 wt% based on the solids content, and so outside the range of claim 1 at issue.
- 1.2.6 As regards the presence of a dye in D1, this is not disclosed in anyone of the claims but only in the description (D1: page 8, line 14 or page 15, line 8) as one of many possible optional components.
- 1.2.7 Thus, in order to arrive at the claimed subject-matter, it is necessary to select the lower limit of the water range disclosed in the description of D1 for a liquid composition in combination with the higher MGDA content disclosed in claim 1, still accepting that it may relate to a liquid composition, and then to select a dye among all possible optional components, **without any clear teaching or pointer** - for example an illustrative example of a liquid formulation or of one comprising a dye - leading to the combination of all these alternatives.
- 1.3 Therefore, in the board's view, D1 does not directly and unambiguously disclose a composition having simultaneously all the features of claim 1 at issue.
- 1.4 For the same reasons, the subject-matter of dependent claims 2 to 11 as well as that of claims 12 and 13, relating to a product comprising a composition according to any of the preceding claims, and the method of claim 14, comprising the step of supplying a

composition as claimed in any of claims 1 to 11 to an automatic dishwashing machine, are novel over D1.

- 1.5 It is noted that the novelty of the use claim 15 was not attacked by the appellant.
- 1.6 It follows from the above considerations that it has not been demonstrated that claims 1 to 15 as granted do not comply with the requirements of Article 54 EPC.
2. Main request - Inventive step
 - 2.1 The board finds for the following reasons that the claimed subject-matter involves an inventive step within the terms of Article 56 EPC.
 - 2.2 As stated in the patent (paragraphs [0003]-[0007]), aminocarboxylate builders like MGDA have an adverse effect on dye stability in detergents, and this problem is particularly acute inside transparent or translucent containers since the transmission of light can accelerate the degradation process, the discoloured product being thus visible to the consumer. Moreover, even though WO 2014/037746 (corresponding to document **D2** in these proceedings) has already offered a solution to this technical problem, the problem has still not been solved for aqueous formulations. The object of the patent is thus to solve this problem and to provide an aqueous automatic dishwashing detergent composition comprising an aminocarboxylate builder and dye having improved dye stability.
 - 2.3 The appellant cited D1 and D2 as possible starting points for the evaluation of inventive step. As regards D1, published on 9 October 2014, i.e. between the priority and filing date of the patent in suit, it is

assumed in the following for the argument's sake that the priority claimed in the patent is not valid, as found in point 2 of the reasons of the decision under appeal.

D1 (page 2, lines 20-26) concerns the provision of automatic dishwashing detergents which inhibit or reduce glass corrosion, and so has not the same purpose as the patent in suit.

D2 (page 2, lines 10-15 and page 2, line 22 to page 3, line 2), acknowledged as background art in the patent, which already recognised the problem of dye stability in automatic dishwashing detergent compositions comprising MGDA and that it was associated with the presence of water, concerns the same technical problem as the patent in suit and is thus the best starting point for the evaluation of inventive step.

- 2.4 The closest prior art is represented by the **non-aqueous gel** composition disclosed in the examples of D2 (pages 16-17, Tables 1 and 2), comprising 48 wt% Trilon M (MGDA) powder and differing from the subject-matter of claim 1 at issue in that it does not comprise a polyalkyleneimine but comprises water in the amounts contained necessarily in MGDA commercial products, which amounts are not disclosed but may be up to 13 wt% (see D2: page 4, lines 20-23), in which case the composition would comprise about 6.2 wt% of water, i.e. an amount outside the range of claim 1 at issue. As an alternative, also the comparative **aqueous gel** composition comprising 48 wt% Trilon M (MGDA) powder and 42 wt% of water, i.e. an amount of water in accordance with claim 1 at issue, can be considered as starting point, this subject-matter differing thus from

claim 1 at issue in that it does not comprise a polyalkyleneimine.

The examples of D2 show in particular that the dye is stable when incorporated into the non-aqueous gel whilst it changes significantly its colour in the aqueous gel.

2.5 The examples of the patent contain comparative tests wherein formulations with or without polyethylenimine (PEI) are subjected during 8 hours to a sun test by using an Atlas Suntester XLS+ and an irradiation intensity of 765 W/m^2 , the black plate standard temperature being of 50°C and the chamber temperature being of $38\text{-}42^\circ\text{C}$. A similar Suntester and similar conditions were also commonly used for assessing photodegradation of chemical compounds as shown e.g. in documents D5 (page 655, left column, chapter 2.2, lines 1-6) and D6 (page 172, chapter 2, lines 14-18). Therefore, the test used in the patent is in the board's view suitable for determining dye stability. The tests of the patent confirm that the addition of polyalkyleneimine in the required amounts to an aqueous composition comprising MGDA and a dye improves the dye stability and thus solves the technical problem underlying the patent.

2.5.1 The appellant, arguing that the alleged improvement had not been shown across the entire scope of claim 1, provided a comparative test labeled D3, supposedly showing that the stability of a dye contained in a composition according to claim 1 at issue was not improved with regard to that in a similar composition not comprising a polyalkyleneimine (in fact in both cases the dye was degraded).

However, the board notes that not only the tested compositions but also the sun test used in D3 are substantially different from those used in the patent, and thus not comparable. While D3 uses as a sun tester a SOL 500S equipment developed by Henkel with an irradiation intensity of 1350 W/m^2 (which intensity was apparently lower (1258 W/m^2) in May 2019 according to D10), the temperature in the used chamber - as stated by the appellant in the grounds of appeal - was controlled not to exceed 30°C .

According to D9 (page 2, right column, last full paragraph), a brochure concerning said SOL equipment, the irradiation intensities recommended for this type of tests are however between 800 and 1200 W/m^2 , and so corresponding to 6 to 9 times the natural solar intensity in Germany, i.e. about 135 W/m^2 .

Thus, the appellant used in D3 not only a greater irradiation intensity than the one in the tests of the patent, but also an intensity greater than that recommended for the SOL equipment. Moreover, even though in the appellant's view the major irradiation intensity used would intend to provide accelerated results simulating a long-term exposure, it is observed that already the test equipment and conditions used in the patent simulate a long-term exposure. In fact, as indicated above, the average natural irradiation intensity is much lower than that applied in the patent, which test thus also aims at simulating an accelerated photodegradation (see also D6, page 172, chapter 2, lines 14-15).

Hence, even though the total irradiation intensity applied in 3 hours in the test according to D3 is inferior to that applied in 8 hours in the test

according to the patent, it cannot be concluded - because of the different conditions applied - that the tests according to D3 would correspond to a shorter exposure under natural conditions than the one applied in the patent. To the contrary, it cannot be excluded that the much higher irradiation intensity used in D3 promotes a faster degradation of the dye.

2.5.2 Therefore, even accepting for the argument's sake that the solution to the technical problem offered by the patent may not be successful at exposure times longer or at irradiation intensities higher than those used in the patent, the tests of D3 cannot jeopardise the results of the patent in suit showing that the technical problem posed has been convincingly solved under the conditions tested, which also reproduce a long-term exposure to natural solar intensity.

2.6 The appellant further argued at the oral proceedings that claim 1, not containing a lower limit for the amount of polyalkyleneimine, could include negligible amounts (even a molecule thereof) and would thus encompass compositions not able to bring about the desired technical advantage. However, in the board's view, the skilled person reading the claim with common sense would understand that it relates to a composition comprising a detectable amount and not a single molecule of polyalkyleneimine. Moreover, in the absence of counter-evidence, there is no reason to assume that even a very small amount of polyalkyleneimine would not provide some improvement since the patent states (paragraph [0016]) that "*Preferably, the lowest amount of the polyalkyleneimine to achieve effective dye stabilising results will be used.*"

Therefore, in the board's view, the technical problem as defined above has been convincingly solved by the addition of a polyalkyleneimine to the composition.

2.7 It remains thus to be decided whether it was obvious to the skilled person to modify the non-aqueous or the aqueous gel disclosed in the examples of D2 by adding inter alia a polyalkyleneamine in order to solve the above technical problem.

2.7.1 D2 in any case does not contain any suggestion that could have prompted the skilled person to add a polyalkyleneimine to such composition with the expectation of reducing dye degradation. As to the other prior art documents cited by the appellant (namely D4, page 6, lines 16-20 or D1), they suggest the use of a polyalkyleneimine in an automatic dishwashing composition for preventing corrosion of non-metallic inorganic items during washing/rinsing but **not** for preventing degradation of the dye.

2.7.2 It follows that the skilled person had no particular reason to combine the disclosure of D2 with the teaching of either D1 or D4 in order to solve the technical problem posed, and so it could have arrived at the claimed subject-matter only by using hindsight.

2.8 As regards inventiveness starting from document D1, it is noted that, as exposed above, this prior art does not disclose a composition having all the features of claim 1 at issue in combination, and even though all features of claim 1 may be retrieved from this document, D1 does not contain any teaching how these features should be combined when the stability of a dye is to be improved when contained in an aqueous composition containing MGDA.

Therefore, the skilled person faced with the technical problem underlying the claimed invention and aware of the instability of a dye in an aqueous composition containing MGDA, would have formulated the composition of D1 rather as a solid, as encompassed by the teaching of this document, and would not have incorporated the dye in a liquid composition with the expectation that it will not be degraded.

Hence, also in this case the skilled person could have arrived at the claimed subject-matter only by using hindsight.

2.9 It follows from the above considerations that the subject-matter of claim 1 as granted was not obvious from the known prior art for the skilled person and thus involves an inventive step within the meaning of Article 56 EPC. By the same token the subject-matter of claims 2 to 14 and claim 15, relating to the use of a polyalkyleneimine in a detergent composition comprising an aminocarboxylate builder and a dye to prevent degradation of the dye, also involve an inventive step.

3. The opponent's appeal thus cannot succeed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated