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**Datasheet for the decision
of 13 June 2019**

Case Number: T 0383/16 - 3.3.06

Application Number: 10721409.0

Publication Number: 2443220

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D06L3/12

Language of the proceedings: EN

Title of invention:
DETERGENT COMPOSITION COMPRISING ANIONIC DYE POLYMER

Patent Proprietor:
Unilever PLC
Unilever N.V.

Opponent:
The Procter & Gamble Company

Headword:
DETERGENT COMPRISING ANIONIC DYE POLYMER / Unilever

Relevant legal provisions:
EPC Art. 123(2), 83, 56

Keyword:

Amendments - added subject-matter (no)
Sufficiency of disclosure - (yes)
Inventive step - non-obvious alternative

Decisions cited:

Catchword:



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Case Number: T 0383/16 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 13 June 2019

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 December
2015 rejecting the opposition filed against
European patent No. 2443220 pursuant to Article
101(2) EPC.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: P. Ammendola
 S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal was filed by the opponent (hereinafter **appellant**) against the decision of the opposition division to reject the opposition filed against European patent Nr. 2 443 220, claim 1 of which reads (the only difference with respect claim 1 as originally filed is made apparent):

"1. A laundry detergent composition comprising from 2 to 70 wt % of a surfactant together with from 0.0001 to 50 wt% of a blue or violet dye-polymer of molecular weight of at least 500, wherein the dye-polymer is obtainable by polymerisation of:

*(a) a dye monomer, the dye monomer **comprising** an alkene covalently bound to a dye, the dye covalently bound to a group selected from: SO_3^- and CO_2^- , the dye monomer having a molar extinction coefficient at a wavelength in the range 400 to 700nm of at least $1000 \text{ mol}^{-1} \text{ L cm}^{-1}$, and*

(b) one or more further alkene comonomer(s), the alkene monomer(s) having molar extinction coefficient at a wavelength in the range 400 to 700nm that is less than $100 \text{ mol}^{-1} \text{ L cm}^{-1}$."

II. With its statement of grounds of appeal the appellant disputed the findings of the opposition division that the wording of granted claim 1 did not contravene Article 100(c)/123(2) EPC and that the claimed laundry detergent composition was sufficiently disclosed (Article 100(b)/83 EPC) and based on an inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC) vis-à-vis the prior art disclosed in D1 (WO 2006/055787 A1) and D2 (US 3,507,850).

III. With a letter dated 23 April 2018 the patent proprietor (hereinafter **respondent**) submitted two sets of amended claims as Auxiliary Request 1 and 2.

IV. At the oral proceedings, at which the question whether the claims as granted met the requirements of Articles 123(2), 83 and 56 EPC was discussed, the final requests of the parties were as follows:

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

The respondent requested that the appeal be dismissed and the patent be maintained as granted (Main Request) or, alternatively, that the patent be maintained on the basis of the claims according to Auxiliary Request 1 or 2 filed with letter dated 23 April 2018.

Reasons for the Decision

1. *Main Request - Allowability of the amendments (Article 123(2) EPC)*

1.1 Claim 1 as originally filed comprised the passage (hereinafter **the relevant passage**) reading:

"(a) a dye monomer, the dye monomer an alkene covalently bound to a dye".

1.2 The appellant argued that there was no reason to assume from the original application that in this passage the manifestly missing wording between the words "monomer" and "an alkene" had to be "comprising". It was equally likely that the missing wording had rather to be "consisting of". Hence, the presence of the word "comprising" in the corresponding passage of granted claim 1 resulted in the addition of subject-matter

extending beyond the direct and unambiguous disclosure of the application as originally filed.

The appellant also stressed that the two equally probable options for the originally missing wording could identify two different groups of "dye monomers". To exemplify this difference, it submitted that "a dye monomer consisting of an alkene covalently bound to a dye" could exclude e.g. any dye monomer in which there were two (or more) dye moieties and/or two (or more) alkene moieties. The same dye monomer could instead be embraced by the wording chosen for amending claim 1, i.e. "a dye monomer comprising an alkene covalently bound to a dye".

1.3 The board notes the following:

- Despite the manifest absence of some wording, it is indisputable that the relevant passage in claim 1 as originally filed can only reasonably be construed as providing information on the structure of "the dye monomer" by means of the expression "an alkene covalently bound to a dye".
- This latter expression *per se* appears manifestly very broad to the person skilled in the art of laundry formulations. In particular "alkene" encompasses any groups of atoms comprising a carbon carbon double bond; "dye" can be any group of atoms in which the person skilled in the field of detergents can identify one of the structures that characterise the known classes of dyes and, therefore, "covalently bound" only implies the presence of either a single covalent bond or of a uninterrupted sequence of covalently bound atoms bridging one of the atoms of the carbons forming

the double bond of the "alkene" with one of the atoms of the "dye".

- No passage of the application as filed is indicative that the generic expression "*an alkene covalently bound to a dye*" has been exclusively used therein with a different meaning, let alone with a meaning more precise than its normal one. The appellant's attempt to interpret more narrowly such expression (see its letter of 13 Mai 2019, page 3, third paragraph, the passage reading "*it would be entirely reasonable for the skilled person to conclude that the vague terms "alkene" and "dye" do not have an unlimited scope, but have a scope that is consistent with the aims of the patent ... as an example, ... reactive functional groups ... would be inconsistent with the stated aim of providing a labile dye which does not build up on a fabric*") is not convincing. The board stresses that claim 1 not only does not require the "dye-polymers" to be free from functional groups that can bind the washed substrate, but does not even state that they are "*labile from cellulosic fibers and do not build-up substantially with the number of washes*", as instead (vaguely) stated in page 2, lines 7 to 8, of the application as filed. The board finds that the allegation of a (vaguely described) aim of the invention in the patent application is *per se* insufficient at attributing a narrower meaning to the terms used in the relevant passage of claim 1 as filed.

- On the contrary, claim 11 as originally filed (which explicitly identifies several possible alternative structures for the "dye monomer") explicitly describes (see in the third last line of

original claim 11: "*food black 1 where the acid amide is replaced by NH₂*") a structure of the "*dye monomer*" in which the original moiety of the starting commercial "*dye*" has even been modified (prior to the actual linking with the alkene moiety). This further confirms the broad meaning of the wording "*alkene covalently bound to a dye*" in original claim 1.

From these facts the skilled reader of the relevant passage of original claim 1 can only conclude that the terms "*alkene*", "*covalently bound*" and "*dye*" are to be construed in accordance with their broad conventional meanings already identified above.

- 1.4 The appellant's submissions (see 1.2 above) require the board to also consider whether the two indefinite articles in the original expression ("*an* *alkene covalently bound to a dye*") might hypothetically be construed as having a closed/narrower meaning (i.e. the same as "one") or as having an open/broader meaning (i.e. the same as "at least one").

The precise meaning of these indefinite articles in original claim 1 can only be construed by the skilled person by also taking into account the remainder of the original application's disclosure.

In the board's view already the comparison with claim 13 as filed renders evident that in the relevant passage the indefinite articles must have the open/broader meaning of "at least one". As a matter of fact, claim 13 (which depends on claim 12 and which explicitly identifies several possible alternative substituents for the preferred "*dye monomers*" based on dyes of the anthraquinone class defined in original

claim 12) explicitly describes the possible presence in preferred dye monomers of one or more " $\text{NHCOR1}=\text{CH}_2$ " groups, i.e. of one or more groups identical to the group identified as the "alkene" throughout the whole application (and also already comprised in the general formula of claim 12).

The fact that in the application as filed the indefinite article has been consistently used with the open meaning of "at least one" is further apparent when considering that in original claim 1 the further definition "*the dye covalently bound to a group selected from: SO_3^- and CO_2* " (immediately subsequent to the relevant passage) also comprises an indefinite article. As a matter of fact, not only most of the structures given for the preferred "dye monomers" on page 8 of the application as filed comprise two or more sulfonate groups, but the description on page 7 of a preferred class of dye monomers (based on anthraquinone) explicitly recites that "*the anthraquinone carries at least one sulphonate*" (emphasis added by the board).

- 1.5 From the above the board concludes that already in the application as filed the structural details of the "dye monomer" directly and unambiguously described in the relevant passage are so broadly formulated to embrace any conceivable chemical compound that comprises at least one (polymerisable) pair of unsaturated carbon atoms, one of which must then be connected by means of a covalent bond or by means of any uninterrupted sequence of covalently bound atoms to (one atom of) any conceivable group of atoms in which the person skilled in the field of detergent compositions can identify at least one group of atoms that is characteristic of one of the known classes of dyes.

1.6 Since the sole meaning that can be attributed to the relevant passage by the skilled reader of the application as filed is very broad and generic, no difference in terms of the subject-matter defined results from completing the missing wording with one or the other of "comprising" or "consisting of". In other words, any "dye monomer" that can be described as comprising "an alkene covalently bound to a dye" can as well be described as consisting of "an alkene covalently bound to a dye", and vice versa.

1.7 The board concludes therefore that the relevant passage of the application as filed directly and unambiguously disclose a generic description of the structure of "the dye monomer" that can be expressed in an equivalent manner by completing the original wording by either "the dye monomer consisting of an alkene covalently bound to a dye", or "the dye monomer comprising an alkene covalently bound to a dye".

1.8 Hence, the presence in granted claim 1 of one of these equivalent expressions, does not produce any addition of new subject-matter vis-à-vis the disclosure of the relevant passage of claim 1 as filed. Thus, the appellant's submissions do not justify reversing the finding of the opposition division that granted claim 1 is not objectionable on the grounds of Article 100(c)/123(2) EPC.

2. Sufficiency of disclosure (Article 100(b)/83 EPC)

2.1 The board preliminarily stresses that an objection of insufficiency of disclosure needs to be based on serious grounds supported by verifiable facts.

2.2 The appellant argued that the patent in suit would only disclose (see [0020] and [0080]) one synthetic route for preparing the dye monomer, namely a reaction of dyes carrying an amino group (possibly obtained by replacing an acid amide group with NH_2) with acryloyl chloride. Also all the listed examples on page 5 of the patent possessed a structure compatible with this synthetic route. However, the sole disclosed synthetic route would only result in dye monomers in which a carbonyl group forms the bridge between the dye and the unsaturated carbons. Hence, only this specific class of dye monomers among those generally defined in claim 1 could actually be reproduced. Thus, the disclosure provided by the patent in suit was not commensurate to the breadth of claim 1.

2.3 The board notes that, as convincingly argued by the respondent, the assessment of sufficiency of disclosure cannot only be based on the guidance (as to how to synthesise the dye monomer) provided by the patent, but also on that deriving from the relevant common general knowledge. In particular, the board concurs with the respondent that the skilled reader of the patent in suit masters abundant common general knowledge of organic chemistry reactions (e.g. those also used to produce such dyes conventionally used in the field of laundry detergents). Such skilled reader would therefore also be aware that each class of "dyes" encompasses a large number of atoms or groups of atoms that are immediately recognised by the skilled person as a possible starting point of organic synthetic routes, i.e. as functional groups for carrying out known organic reactions.

Therefore, the board finds it plausible, in the absence of any evidence of the contrary, that the skilled

person can easily identify other synthetic routes, different from that described in the patent, that allow to attach a side chain carrying an alkene group onto one of these functional groups (of course without destroying the system of conjugated rings responsible for the "dye"'s colour).

- 2.4 The board stresses that the appellant has provided no experimental evidence or detailed theoretical reasoning suitable at depriving of plausibility the above findings. Furthermore, it has neither stated to have failed in finding a conventional organic synthetic route apt at binding an unsaturated side chain onto at least one class of dyes conventionally used as shading/hueing dyes in the field of laundry detergents, nor has it provided experimental evidence of difficulties encountered in carrying out on certain dyes the conventional synthetic routes. Moreover, despite of the fact that the respondent (already in letter of 23 April 2018; points 11 and 15) had explicitly referred to the existence of common general knowledge and argued that the appellant had failed to identify any example of a dye monomer (falling within the definition of granted claim 1) that could not be made, but the appellant has neither disputed the existence of such common general knowledge nor identified such dye monomers. Indeed, the sole fact mentioned by the appellant in support of its objection (namely that the sole synthetic route disclosed in the patent has some implications as to the possible nature of the starting reagents and of the resulting bond between them) has no evident bearings on the plausibility of the existence of other conventional synthetic routes for preparing the dye monomer.

2.5 Hence, the board concludes that the appellant failed to identify serious grounds based on verifiable facts that could justify the requested reversal of the finding of the opposition division that the subject-matter of granted claim 1 is sufficiently disclosed. Thus, such claim is found not to be objectionable on the grounds of Article 100(b)/83 EPC.

3. Inventive step (Article 100(a) EPC / 56 EPC)

3.1 The objection of lack of inventive step was directed against the subject-matter of claim 1 as granted.

3.2 The closest prior art

It is undisputed among the parties that the laundry detergent compositions disclosed in D1, in particular those of Example 10, all containing at least one of "CMC-Blue", "Amylose-Blue" or "CMC-violet" as dye polymer conjugate, represent the most suitable starting point for the assessment of inventive step. These prior art compositions, similarly to the patented ones, also aim at improving the perceived "whiteness" of the washed fabric without the negatives associated with dye build-up (see "BACKGROUND OF THE INVENTION" on page 1 of D1).

Hence, and also considering that the subject-matter of granted claim 1 only differs from D1 in the nature of the shading/hueing dye (the "*blue or violet dye-polymer*" defined in granted claim 1 vs. the blue or violet "dye polymer conjugate" used in the compositions of Example 10 of D1), the board sees no reason to take a different stance.

3.3 The technical problem solved

3.3.1 Even though the respondent had argued that the patented composition would display improved properties over the closest prior art, the opposition division did "not see useful a discussion of a more demanding technical problem which refers to an element of improvement if the provision of a mere alternative could satisfy the requirement of Art. 56 EPC. Since this is the case as shown below, no further analysis is deemed necessary for any of the allegedly improved properties or the question of whether such improved properties would have been achieved over the whole scope of the claims".

In other words, the opposition division considered the fact that the claimed composition appeared non-obvious when considering the (less ambitious) technical problem identified by the appellant, sufficient to reject the ground of opposition of lack inventive step.

3.3.2 Since, for the reasons indicated hereinafter, the board also finds unconvincing the appellant's submissions that the subject-matter of claim 1 would represent an obvious alternative to the laundry detergent compositions of the prior art, there is also no need for the board to come to a conclusion as to the (disputed) existence of further advantages over the closest prior art (and the possibly consequent consideration of a more ambitious technical problem).

3.3.3 Thus, also in the subsequent reasoning it is assumed, for the sake of an argument in favour of the appellant, that the technical problem solved is simply the provision of further laundry detergent compositions comprising a violet or blue shading/hueing dye having properties comparable to those of the laundry detergent

compositions of Example 10 of D1, i.e. the provision of an alternative to the prior art of departure.

3.4 The solution and its success

The offered solution to this technical problem is the laundry detergent composition defined in granted claim 1, requiring in particular a specific amount of a "*blue or violet dye-polymer*" that has a molecular weight of at least 500 and that is obtainable by polymerisation of the (unsaturated) monomers defined in items "(a)" and "(b)" of that claim.

It is undisputed that the subject-matter of granted claim 1 solves the technical problem identified above.

3.5 Non-obviousness of the solution

3.5.1 The appellant argued that the subject-matter of granted claim 1 would represent an obvious alternative to the prior art laundry detergents disclosed in Example 10 of D1 for essentially the following reasons.

(a) D1 (in particular the passage on page 3, lines 11 to 19) itself would identify the relevant properties of the "dye conjugates" (and also the subgroup thereof "dye polymer conjugates") in their ability to deposit on the washed substrate while remaining readily removable.

(b) D1 would also identify the nature of these "dye conjugates" (and also the subgroup thereof "dye polymer conjugates") in the passage in page 7, lines 30 to 31, reading: "[d]ye conjugates include materials wherein a dye and a conjugated material,

for example a polymer or clay, are chemically or physically bound together".

- (c) The skilled person searching for an alternative to the laundry detergents of Example 10 of D1 would consider obvious to replace the specific blue or violet "dye polymer conjugates" in D1 by other "dye polymer conjugates" and thus, would search in the field of dyes for other materials in accordance with the definition of the "dye polymeric conjugates" provided in D1.
- (d) The skilled person would thus also consider D2 which describes (abstract, claim 1 and Examples 54 to 83) blue or violet "fugitive dyes" for (temporary) colour coding textile fibers, that would also manifestly appear in accordance with the definition of the "*blue or violet dye-polymer*" given in granted claim 1.
- (e) The description in D2 (column 1, lines 50 to 55, and column 1, line 66 to column 2, line 2) of the properties of these "fugitive dyes" (i.e. being easy to apply to textile fibers while remaining completely removable therefrom) confirmed that these further embodiments of the "dye polymer conjugate" defined in D1 also possessed the relevant properties of the "dye polymer conjugate" identified in D1.

Hence the skilled person seeking an alternative to the laundry detergent compositions of D1 would be highly motivated to replace the "dye polymer conjugate" with the "fugitive dyes" disclosed in D2, thereby arriving at the subject-matter of granted claim 1.

3.5.2 The board is not convinced by this reasoning because it is not plausible that the skilled reader of D1 and D2 would identify the "fugitive dyes" disclosed in D2 (for textile fibers' temporary color coding) as further embodiments of the "dye polymer conjugate" described in D1 (as shading/hueing dyes for laundry composition).

In this respect, the board notes that the definition of the "dye conjugate" in D1, page 7, lines 30 to 31, is vague and extremely broad due to the open terms "include materials" and "chemically and physically bound". For the board, this vague and broad definition only teaches that some materials (rather than all the materials) "wherein a dye and a conjugated material, for example a polymer or clay, are chemically or physically bound together" can be used as an effective shading/hueing dye in laundry detergent compositions.

The same conclusion is confirmed from the fact that:

- certain examples of dyes conjugates are described as "[s]uitable" in the third paragraph of page 8 of D1 and, similarly,
- certain dyes and polymeric materials are described as "[s]uitable" in the fifth paragraph of the same page.

These teachings appear to necessarily imply the possible existence of "dye conjugates" that are instead unsuitable as shading/hueing dyes for laundry detergent compositions.

3.5.3 The board also notes that the broadest description provided in D1 for the "dye polymer conjugates" - i.e. that contained, *inter alia*, in claim 3 of D1 - embraces exclusively materials obtainable by tethering reactive dyes onto (preformed) polymers carrying certain

specific moieties (i.e. hydroxyl groups, primary or secondary amine groups or thiol groups).

Instead, the "fugitive dyes" of D2 undisputably have a different structure: they are copolymers of distinct monomers carrying certain (polymerisable) unsaturated group.

Finally, the "fugitive dyes" of D2 being described as adhering onto textile fibers, it cannot be considered as a disclosure that such dye would deposit under washing conditions because the conditions used in D2 for colouring the fibres are different from washing conditions at least for the absence of any detergent (see D2, column 8, lines 66 to column 9, line 2).

Similarly, the fact that the "fugitive dyes" of D2 are described as completely removable under conditions possibly similar to washing (see e.g. column 9, lines 16 to 26) cannot be presumed to be indicative that after such dye removal step the "fugitive dyes" would nevertheless remain on the textile fibers in amounts sufficient at producing an improved perception of whiteness. Hence, the properties of the "fugitive dyes" described in D2 as enabling their use for temporary fibers' color coding, do not necessarily imply that these dyes also have the properties of the shading/hueing "dye polymer conjugates" of the laundry detergent compositions of D1.

- 3.5.4 The board concludes therefore that the "fugitive dyes" of D2 do not appear to the skilled person as alternative embodiments of the "dye polymer conjugates" used in D1 as shading/hueing dyes for laundry detergent compositions.

3.5.5 Hence, the combination of D1 with D2 does not render obvious for the skilled person to solve the posed problem by replacing e.g. the CMC-Blue used as shading/hueing dye in the laundry detergent compositions of Example 10 of D1 by any of the blue or violet "fugitive dyes" disclosed in D2 as suitable for temporary color coding of textile fibers.

3.5.6 Accordingly, the board concludes that the appellant failed to render plausible that the subject-matter of granted claim 1 would represent an obvious alternative to the prior art. Thus, the appellant's submissions cannot justify to reverse the finding of the opposition division that the subject-matter of granted claim 1 also involves an inventive step. This claim is therefore also found not objectionable under Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated