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**Datasheet for the decision  
of 10 October 2019**

**Case Number:** T 1212/16 - 3.3.06

**Application Number:** 10171451.7

**Publication Number:** 2412870

**IPC:** D21H17/07, D21H17/09,  
D21H17/51, C07D251/00,  
C09K11/06, D21H21/30

**Language of the proceedings:** EN

**Title of invention:**

Composition and process for whitening paper

**Patent Proprietor:**

Blankophor GmbH & Co. KG

**Opponent:**

Archroma IP GmbH

**Headword:**

Surface treatment of paper / BLANKOPHOR

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step (all requests) - (no)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 1212/16 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 10 October 2019**

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**Decision under appeal:** **Interlocutory decision of the Opposition**  
**Division of the European Patent Office posted on**  
**7 March 2016 maintaining European Patent No.**  
**2412870 in amended form.**

**Composition of the Board:**

**Chairman** J.-M. Schwaller  
**Members:** L. Li Voti  
J. Hoppe

## **Summary of Facts and Submissions**

- I. The present appeals of the patent proprietor and of the opponent are against the decision of the opposition division to maintain European patent no. 2 412 870 in amended form.
- II. With its grounds of appeal the opponent held the claims as upheld by the opposition division to lack inventive step starting *inter alia* from D3 (EP 2 191 231 A1) as the closest prior art.
- III. In its grounds of appeal the patent proprietor defended the patent as granted and filed four sets of amended claims as auxiliary requests 1 to 4.
- IV. Following the board's preliminary opinion the patent proprietor filed new auxiliary requests 3 and 4 with a letter dated 18 July 2019.
- V. With its reply the opponent requested not to admit these new auxiliary requests and objected them to under Article 56 EPC.
- VI. At the oral proceedings before the board the essence of the discussion focused on inventive step in the light of document D3.
- VII. The final requests of the parties were the following:

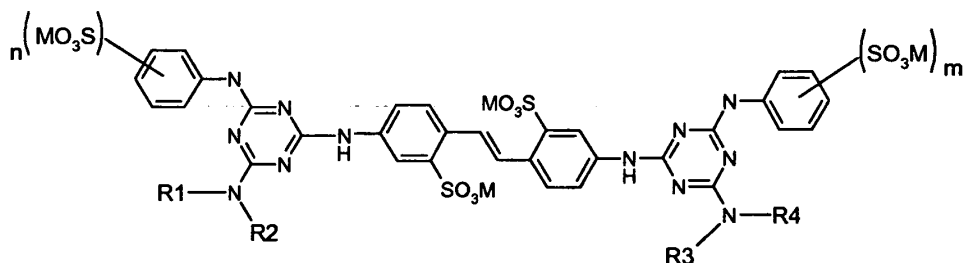
The appellant/patent proprietor requested that the decision under appeal be set aside and that the opposition be rejected, or as an auxiliary measure, that the patent be maintained on the basis of auxiliary requests 1 or 2 filed with the grounds of appeal, or of

auxiliary requests 3 or 4 filed with letter of 18 July 2019,  
or as a further auxiliary measure,  
that the opponent's appeal be dismissed and that the patent be maintained as upheld by the opposition division (auxiliary request 5).

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

VIII. Claim 1 according to the **main request** (patent as granted) reads as follows:

"1. A composition suitable for surface treatment of paper, wherein the composition contains  
(a) at least one fluorescent whitening agent of the formula (I)

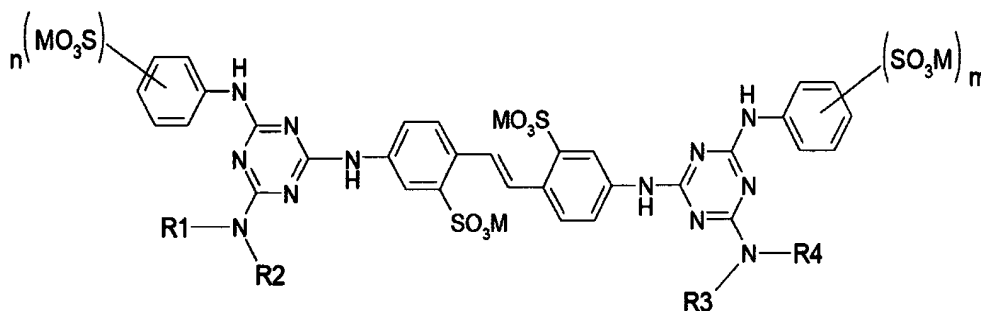


wherein  $n$  and  $m$  are, independently of each other, an integer of 1, 2, or 3;  
 $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  represent, independently of each other, hydrogen,  $C_1$ - $C_4$  alkyl,  $C_2$ - $C_4$  alkoxyalkyl,  $C_2$ - $C_4$  cyanoalkyl, or  $C_2$ - $C_4$  hydroxyalkyl; or  $R_1$  and  $R_2$  or  $R_3$  and  $R_4$  independently of each other together with N atom form morpholine, piperidine or pyrrolidine ring;  
wherein at least one of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  contains at least 3 carbon atoms;

*M represents hydrogen, or one equivalent of a cation, in particular Li, Na, K, Ca, Mg, ammonium, or ammonium which is mono-, di-, tri- or tetrasubstituted by C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>2</sub>-C<sub>4</sub> hydroxyalkyl;*  
*(b) at least one salt of a bivalent cation;*  
*(c) at least one carrier; and*  
*(d) water."*

Claim 1 according to **auxiliary request 1** differs from claim 1 according to the main request only in that R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> of formula (I) do not represent any longer "C<sub>2</sub>-C<sub>4</sub> hydroxyalkyl" and in that it contains the following disclaimer: "*excluding a composition comprising (a) the fluorescent whitening agent of formula (I) with R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> being n-propyl, n and m being 2, the -SO<sub>3</sub>M groups being in 2,5-position, and M being Na; (b) calcium chloride, (c) anionic potato starch, and (d) water."*

Claim 1 according to **auxiliary request 2** differs from claim 1 according to auxiliary request 1 only in that the fluorescent whitening agent of formula (I) has the following structural formula:



Claim 1 according to **auxiliary request 3** differs from claim 1 according to auxiliary request 2 in that it contains the following additional disclaimer: "*and excluding a composition comprising the fluorescent*

*whitening agent of formula (I) with  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  being n-propyl, n and m being 2, the  $-SO_3M$  groups being in 2,5-position, and M being Na; chalk, clay, a sodium salt of polyacrylic acid, a styrene butadiene copolymer, polyvinyl alcohol, and water."*

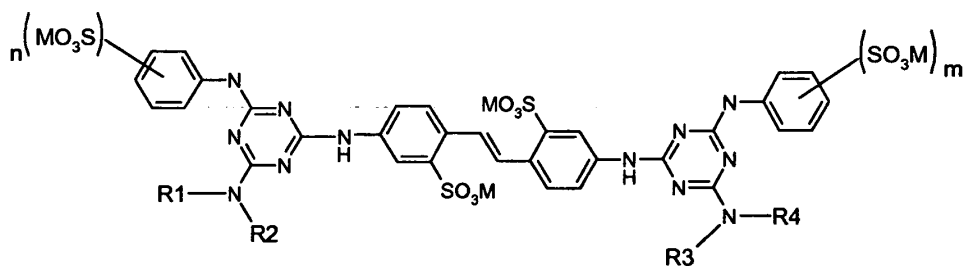
Claim 1 according to **auxiliary request 4** differs from claim 1 according to auxiliary request 2 in that it contains the following additional disclaimers:

*"excluding a composition comprising the fluorescent whitening agent of formula (I) with  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  being n-propyl, n and m being 2, the  $-SO_3M$  groups being in 2,5-position, and M being Na; chalk, clay, a sodium salt of polyacrylic acid, a styrene butadiene copolymer, polyvinyl alcohol, and water;  
excluding a composition comprising the fluorescent whitening agent of formula (I) with  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  being n-propyl, n and m being 2, the  $-SO_3M$  groups being in 2,5-position, and M being Na; calcium chloride, anionic potato starch, polyethylene glycol having an average molecular weight of 1500, and water; and  
excluding a composition comprising the fluorescent whitening agent of formula (I) with  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  being n-propyl, n and m being 2, the  $-SO_3M$  groups being in 2,5-position, and M being Na; chalk, clay, a sodium salt of polyacrylic acid, a styrene butadiene copolymer, polyvinyl alcohol, polyethylene glycol having an average molecular weight of 1500, and water."*

Claim 1 according to **auxiliary request 5** (claims as upheld by the opposition division) reads as follows (amendments with respect to claim 1 as granted put in evidence by the board):

*"1. A composition suitable for surface treatment of paper, wherein the composition contains*

(a) at least one fluorescent whitening agent of the formula (I)



wherein  $n$  and  $m$  are, independently of each other, an integer of 1, 2, or 3;

$R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  represent, independently of each other, hydrogen,  $C_1$ - $C_4$  alkyl,  $C_2$ - $C_4$  alkoxyalkyl, **or**  $C_2$ - $C_4$  cyanoalkyl, ~~or  $C_2$ - $C_4$  hydroxyalkyl~~; or  $R_1$  and  $R_2$  or  $R_3$  and  $R_4$  independently of each other together with N atom form morpholine, piperidine or pyrrolidine ring; wherein at least one of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  contains at least 3 carbon atoms;

$M$  represents hydrogen, or one equivalent of a cation, in particular Li, Na, K, Ca, Mg, ammonium, or ammonium which is mono-, di-, tri- or tetrasubstituted by  $C_1$ - $C_4$  alkyl or  $C_2$ - $C_4$  hydroxyalkyl;

(b) at least one salt of a bivalent cation;

(c) at least one carrier; and

(d) water.

**wherein the composition is a size press liquor;**

**excluding a composition comprising (a) the fluorescent whitening agent of formula (I) with  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  being  $n$ -propyl,  $n$  and  $m$  being 2, the  $-SO_3M$  groups being in 2,5-position, and  $M$  being Na; (b) calcium chloride, (c) anionic potato starch, and (d) water."**



## Reasons for the Decision

### 1. Auxiliary request 5 - inventive step

1.1 Preliminary, the board agrees with the patent proprietor that it is directly apparent from the definition of the claimed invention that formula (I) contains an obvious error in the sense that the two "divalent" nitrogens linking the triazinyl and the sulfonate substituted phenyl groups should be understood as bearing an additional hydrogen atom, as for example in compounds FWA1 and FWA2 illustrated in the examples (paragraphs [0034] and [0035]) of the patent; see also point 5.4 of the decision under appeal).

### 1.2 The claimed invention

It is apparent from claim 1 at issue that the invention concerns a size press liquor suitable for the surface treatment of paper comprising a fluorescent whitening agent (FWA) of formula (I), a salt of a bivalent cation, a carrier and water.

### 1.3 The closest prior art

The parties agreed that document D3, which has the same goal (see paragraphs [0001], [0007] and [0008]) as the contested patent, is a suitable starting point for the evaluation of inventive step.

As discussed during oral proceedings, the preferred sizing compositions defined in claim 4 or paragraph [0016] of D3, can be held as representing the closest prior art.

- 1.4 The underlying technical problem
- 1.4.1 According to the patent (paragraphs [0005] and [0037]), the problem underlying the claimed invention is to provide a size press liquor containing FWAs able to provide improved whiteness in the presence of salts of bivalent cations, such as calcium chloride.
- 1.4.2 The parties agreed at the oral proceedings that the sizing compositions of D3 were suitable as "size press liquors", in particular in view of the passage at page 6, lines 34-35 of D3, which disclosed that the size-press was the preferred method of application of said sizing compositions. It was also not disputed that the compositions according to D3 already provided improved whiteness in the presence of salts of bivalent cations (see paragraph [0103] of D3).
- 1.4.3 The proprietor argued that the compositions claimed had the advantage over those of D3 to avoid the need of a protective polymer, which was an essential component of the sizing liquors of D3.
- This argument could not convince the board, because on the one hand, claim 1 at issue does not exclude the presence of such a protective polymer as an additional component, and on the other hand, the protective polymer of D3, which can e.g. be polyvinyl alcohol (see D3, paragraph [0026]), is similarly held in the patent in suit (page 3, lines 57-58) as one of the possible carrier (c) for the size press liquor defined in claim 1 at issue.
- 1.4.4 Eventually, it is noted that the examples in the patent (paragraphs [0035] and [0036]) do no longer illustrate anyone of the components defined by formula (I) of

claim 1, since FWA 1 is encompassed by claim 4 of D3 and FWA 2 is excluded by the disclaimer defined in claim 1, nor does the patent in suit show any improvement over the closest prior art represented by D3.

- 1.4.5 Therefore, as also agreed by both parties during oral proceedings, the technical problem underlying the invention has to be formulated in the less ambitious terms of providing a further size press liquor containing FWAs providing good whiteness in the presence of salts of bivalent cations.

It was not in dispute that this technical problem has been solved by using a FWA according to formula (I) of claim 1.

- 1.5 Obviousness of the proposed solution

- 1.5.1 It is not in dispute that D3 discloses a size press liquor which differs from that of claim 1 at issue only in the definition of the radicals  $R_{1-4}$ .

- 1.5.2 It remains to be decided whether it would have been obvious for the skilled person, faced with the above technical problem, to select radicals  $R_{1-4}$  in accordance with the requirements of claim 1 at issue for the FWA defined in D3.

- 1.5.3 The board notes in this respect that claim 4 and paragraph [0016] of D3 already identify hydrogen, ethyl and cyanoethyl, i.e. radicals in accordance with claim 1 at issue (cyanoethyl has the three required carbon atoms) among the **especially** preferred radicals. As discussed at the oral proceedings, other preferred radicals, namely those containing 4 carbon atoms and

falling under formula (I) of claim 1 at issue (for example,  $\beta$ -methylpropyl) are additionally disclosed in claim 3 of D3.

Moreover, one of the preferred FWAs of D3 is that of formula (8) disclosed on page 14, which contains two cyanoethyl radicals as radicals  $R_1$ - $R_4$ , i.e. radicals having at least 3 carbon atoms as required by claim 1 at issue, and two  $\beta$ -hydroxypropyl radicals **not** belonging to formula (I) of claim 1 at issue.

- 1.6 In view of these teachings in D3, the board is convinced that it would have been obvious for the skilled person, faced with the technical problem posed, to try other FWAs having preferred radicals  $R_1$ - $R_4$  as discussed above, for example those wherein the two  $\beta$ -hydroxypropyl radicals of formula (8) are replaced with other equally preferred radicals listed in claim 4 or claim 3, for example ethyl radicals.
- 1.6.1 The board is thus not convinced by the proprietor's argument that the skilled person, by following the teaching of D3, would not have selected an FWA having all the features of claim 1 at issue. To the contrary, it would have been obvious for him to try such alternative FWAs encompassed by claim 4 or 3 of D3 and having a formula in accordance with claim 1 at issue with the expectation of obtaining similar whiteness results in presence of bivalent cationic salts.
- 1.6.2 The board thus concludes that the skilled person, starting from D3, would arrive without using inventive skill at the subject-matter of claim 1 at issue, which thus lacks inventive step under Article 56 EPC.
- 1.7 Auxiliary request 5 is thus not allowable.

2. Main request and auxiliary requests 1 to 4 - inventive step
- 2.1 The board notes that the subject-matter of claim 1 of these requests includes the same subject-matter as claim 1 of auxiliary request 5, since these claims are more generic as they do not contain the definition of the composition as a "size press liquor" and they contain either the corrected version of structural formula (I) discussed under point 1.1 above or disclaimers, which are not taken into account for assessing inventive step). This was not disputed by the proprietor.
- 2.2 It follows that the arguments expressed for auxiliary request 5 apply *mutatis mutandis* to these requests, the subject-matter of which therefore lacks inventive step under Article 56 EPC either.
3. It is noted that since none of the requests is allowable as lacking an inventive step there is no need to decide on the admissibility of auxiliary requests 3 and 4.

## Order

### For these reasons it is decided that:

1. The patent proprietor's appeal is dismissed.
2. The decision under appeal is set aside.
3. The patent is revoked.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated