Claim No. HP-2016-000021

IN THE HIGH COURT OF JUSTICE
CHANCERY DIVISION
PATENTS COURT

BETWEEN:

DEEPAK NITRITE LIMITED
(a company incorporated under the laws of India)

Claimant

-and-

ARCHROMA IP GmbH
(a company incorporated under the laws of Switzerland)

Defendant

ANNEX A TO THE STATEMENT OF GROUNDS FOR AMENDMENT OF EP (UK) 2,260,145

Page 3 of the Patent (specifically, paragraphs [0010] and [0011] of the specification) is proposed to be amended as shown on the following page.

wherein

R_1	is hydrogen or SO_3^-,
R_2	is hydrogen or SO_3^-,
R_3	is hydrogen, C_{1-4} alkyl, C_{2-3} hydroxyalkyl, $CH_2CO_2^-$, $CH_2CH_2CONH_2$ or CH_2CH_2CN,
R_4	is C_{1-4} alkyl, C_{2-3} hydroxyalkyl, $CH_2CO_2^-$, $CH(CO_2^-)CH_2CO_2^-$ or $CH(CO_2^-)CH_2CH_2CO_2^-$, benzyl, or
R_3 and R_4	together with the neighbouring nitrogen atom signify a morpholine ring, and
	wherein
M	represents the required stoichiometric cationic equivalent for balancing the anionic charge in formula (1) and is a combination of Mg^{2+} together with at least 1, preferably 1, 2, 3, 4, 5 or 6, more preferably 1, 2 or 3, even more preferably 1 or 2, further cations, the further cations being selected from the group consisting of H^+, alkali metal cation, alkaline earth metal cation other than Mg^{2+}, ammonium, mono-C_1-C_4-alkyl-di-C_2-C_3-hydroxyalkyl ammonium, di-C_1-C_4-alkyl-mono-C_2-C_3-hydroxyalkyl ammonium, ammonium which is mono-, di- or trisubstituted by a C_2-C_3 hydroxyalkyl radical and mixtures thereof, wherein the molar ratio of the Mg^{2+} to the further cation in M is from 50 to 50 and 99.99 to 0.01.

[0011] The molar ratio of the Mg^{2+} to the further cation in M is preferably from 50 to 50 and 99.9 to 0.1, more preferably from 50 to 50 and 99 to 1, even more preferably from 50 to 50 and 95 to 5, most preferably from 50 to 50 and 90 to 10, in particular from 50 to 50 and 80 to 20, specifically from 50 to 50 and 70 to 30, and more specifically from 50 to 50 and 60 to 40.

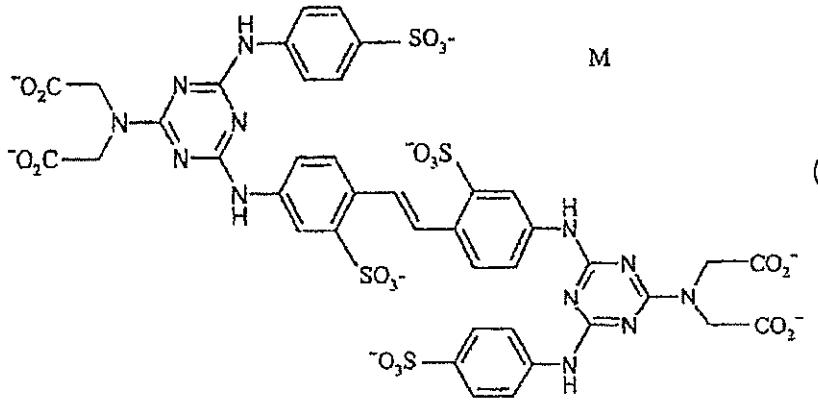
[0012] An alkali metal cation is preferably Li^+, Na^+ or K^+.

An alkaline earth metal cation other than Mg^{2+} is preferably Ca^{2+}.

[0013] Preferably, the further cation in M is selected from the group consisting of H^+, Li^+, Na^+, K^+, Ca^{2+}, N-methyl-N,N-diethanolammonium, N,N-dimethyl-N-ethanolammonium, tri-ethanolammonium, tri-isopropanolammonium and mixtures thereof.

[0014] Preferred compounds of formula (1) are those wherein R_3 represents hydrogen, methyl, ethyl, n-propyl, isopropyl, β-hydroxyethyl, β-hydroxypropyl, $CH_2CO_2^-$, $CH_2CH_2CONH_2$ or CH_2CH_2CN and R_4 represents methyl, ethyl, n-propyl, isopropyl, 2-butyl, β-hydroxyethyl, β-hydroxypropyl, $CH_2CO_2^-$, $CH(CO_2^-)CH_2CO_2^-$, $CH(CO_2^-)CH_2CH_2CO_2^-$ or benzyl.

[0015] Compounds of formula (2) and (3) with M having the definition as described above, also in all its preferred embodiments, are specific examples for the compounds of formula (1); compounds of formula (2) and (3) with M being a mixture of Mg^{2+} with Na^+ and/or K^+ are further specific examples, but the invention is not limited to these specific examples.



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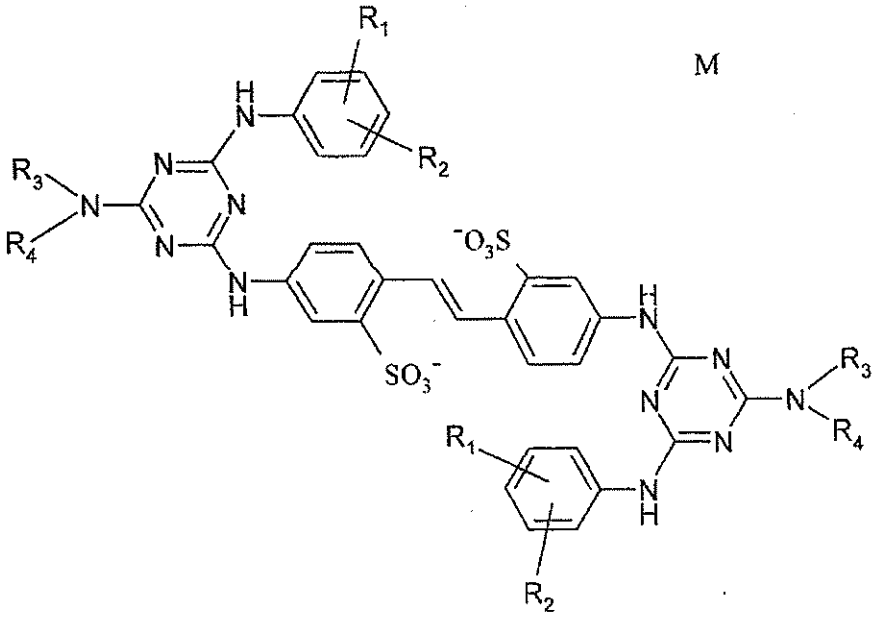
ANNEX B TO THE
STATEMENT OF GROUNDS FOR
AMENDMENT OF EP (UK) 2,260,145

Set out below are the proposed amended claims, shown in mark-up form against the claims as originally granted.

1. Compound of formula (1),



M

(1)

wherein

R_1 is hydrogen or SO_3^-,

R_2 is hydrogen or SO_3^-,

R_3 is hydrogen, C_{1-4} alkyl, C_{2-3} hydroxyalkyl, $CH_2CO_2^-$, $CH_2CH_2CONH_2$ or CH_2CH_2CN,

R_4 is C_{1-4} alkyl, C_{2-3} hydroxyalkyl, $CH_2CO_2^-$, $CH(CO_2^-)CH_2CO_2^-$ or $CH(CO_2^-)CH_2CH_2CO_2^-$, benzyl, or

R_3 and R_4 together with the neighbouring nitrogen atom signify a morpholine ring, and

wherein

M represents the required stoichiometric cationic equivalent for balancing the anionic charge in formula (1) and is a combination of Mg^{2+} together with at least 1, preferably 1, 2, 3, 4, 5 or 6, more preferably 1, 2 or 3, even more preferably 1 or 2, further cations, the further cations being selected from the group consisting of H^+, alkali metal cation, alkaline earth metal cation other than Mg^{2+}, ammonium, mono-C_1-C_4-alkyl-di-C_2-C_3-hydroxyalkyl ammonium, di-C_1-C_4-alkyl-mono-C_2-C_3-hydroxyalkyl ammonium, ammonium which is mono-, di- or trisubstituted by a C_2-C_3 hydroxyalkyl radical and mixtures thereof, wherein the molar ratio of the Mg^{2+} to the further cation in M is from 50 to 50 and 99.99 to 0.01.

2. Compound of formula (1) as defined in claim 1, wherein

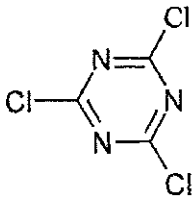
R_3 represents hydrogen, methyl, ethyl, n-propyl, iso-propyl, ß-hydroxyethyl, ß-hydroxypropyl, $CH_2CO_2^-$, $CH_2CH_2CONH_2$ or CH_2CH_2CN;

R_4 represents methyl, ethyl, n-propyl, isopropyl, 2-butyl, ß-hydroxyethyl, ß-hydroxypropyl, $CH_2CO_2^-$, $CH(CO_2^-)CH_2CO_2^-$, $CH(CO_2^-)CH_2CH_2CO_2^-$ or benzyl.

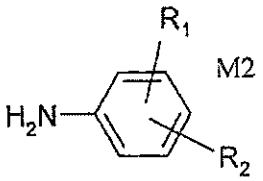
3. Process for the preparation of a compound of formula (1) as defined in claim 1, characterized by a reaction A, which is followed by a reaction B, which is followed by a reaction C,

wherein

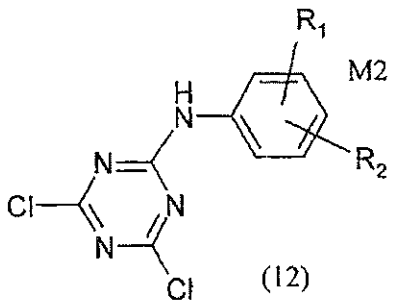
in reaction A a compound of formula (10) is reacted with a compound of formula (11) to a compound of formula (12);



(11)

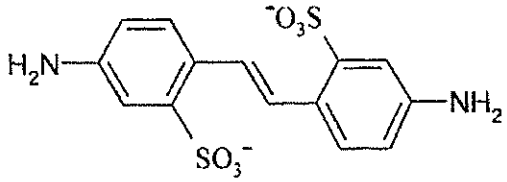


(10)

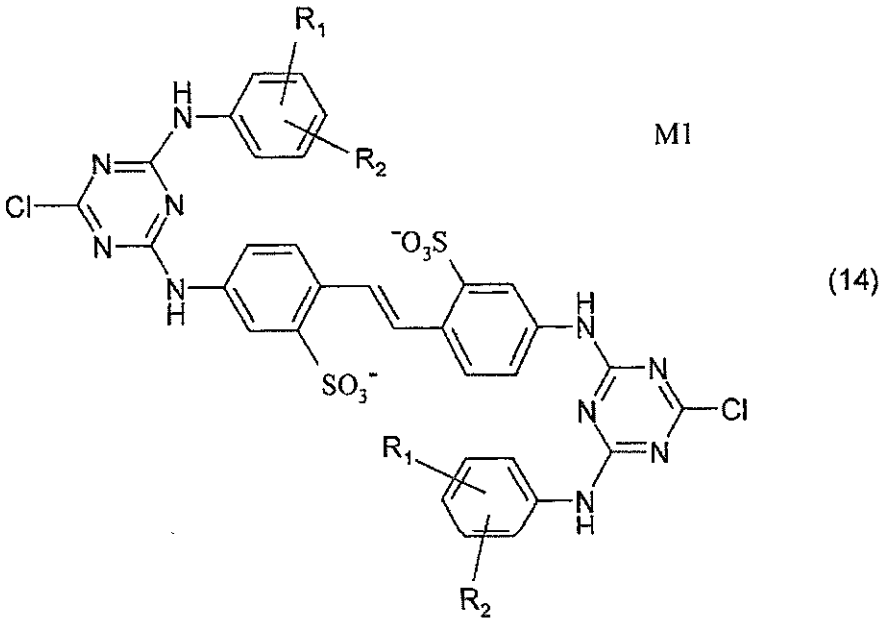


(12)

in reaction B a compound of formula (12) is reacted with a compound of formula (13) to a compound of formula (14);

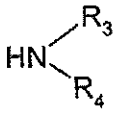


M1 (13)



M1 (14)

and in reaction C a compound of formula (14) is reacted with a compound of formula (15) to the compound of formula (1);



(15)

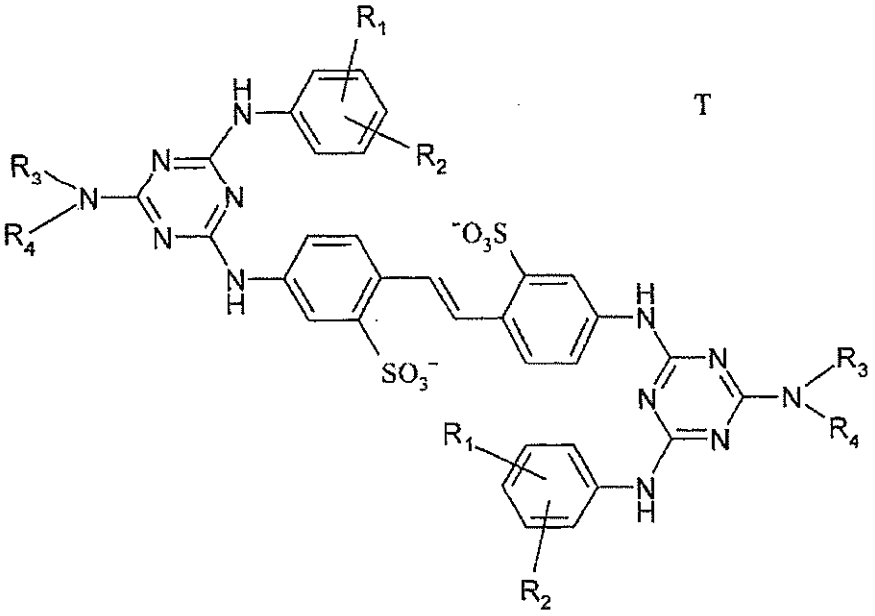
with R_1, R_2, R_3 and R_4 being as defined in claim 1;

M1 is identical or different in formula (13) and (14) and represents the required stoichiometric cationic equivalent for balancing the anionic charge in these formulae and is at least 1 cation selected from the group consisting of H^+, alkali metal cation, alkaline earth metal cation other than magnesium, ammonium, mono-C_1-C_4-alkyl-di-C_2-C_3-hydroxyalkyl ammonium, di-C_1-C_4-alkyl-mono-C_2-C_3-hydroxyalkyl ammonium, ammonium which is mono-, di- or trisubstituted by a C_2-C_3 hydroxyalkyl radical and mixtures thereof,

M2 is independently from each other identical or different in formula (10) and (12) and represents the required stoichiometric cationic equivalent for balancing the anionic charge in these formulae in the case, that either R_1 or R_2 or both R_1 and R_2 are SO_3^-, and has the same definition as M1,

with the proviso, that at least 1 of the reactions A, B or C is carried out in the presence of the cation CAT, with the cation CAT being Mg^{2+}.

4. Process for the preparation of compound of formula (1) as defined in claim 1, characterized by mixing a compound of formula (20) with a component b), which is a magnesium salt MS2, in aqueous medium;



T (20)

wherein

R_1, R_2, R_3 and R_4 have the definition as in claim 1;

and wherein

T balances the anionic charge and represents the required stoichiometric equivalent of a cation selected from the group consisting of H^+, alkali metal cation, ammonium, mono-C_1-C_4-alkyl-di-C_2-C_3-hydroxyalkyl ammonium, di-C_1-C_4-alkyl-mono-C_2-C_3-hydroxyalkyl ammonium, ammonium which is mono-, di- or trisubstituted by a C_2-C_3 hydroxyalkyl radical and mixtures thereof.

5. Process as defined in claim 4 for the preparation of compound of formula (1) as defined in claim 1, wherein the magnesium salt MS2 is selected from the group consisting of magnesium acetate, magnesium bromide, magnesium chloride, magnesium formate, magnesium iodide, magnesium nitrate, magnesium sulphate and magnesium thiosulphate.

6. Process as defined in claim 4 or 5 for the preparation of compound of formula (1) as defined in claim 1, wherein the mixing is done in aqueous solution.

7. Use of a compound of formula (20) as defined in claim 4 for the preparation of a compound of formula (1) as defined in claim 1.

8. Use of the compound of formula (1) as defined in claim 1 in sizing compositions for brightening paper.

9. Process for optical brightening of paper comprising the steps of

a) applying a sizing composition comprising the compound of formula (1) as defined in claim 1 to the paper,

b) drying the treated paper.

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ANNEX C TO THE STATEMENT OF GROUNDS FOR AMENDMENT OF EP (UK) 2,260,145

The defendant patentee ("Archroma") seeks to amend EP (UK) 2,260,145 ("the Patent") pursuant to section 75(1) of the Patents Act 1977 ("the Act") and rule 63.10 in the manner set out at Annexes A and B to the Statement of Grounds. Those amendments can be summarised as follows:

1. Claim 1 is sought to be amended by the addition of the following words to the end of claim 1:

   "wherein the molar ratio of the Mg^{2+} to the further cation in M is from 50 to 50 and 99.99 to 0.01"

2. The specification is sought to be amended by:

   (1) the addition of the following words to the end of [0010]:

   "wherein the molar ratio of the Mg^{2+} to the further cation in M is from 50 to 50 and 99.99 to 0.01"; and

   (2) the deletion of [0011].