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# Datasheet for the decision of 3 May 2019

**Case Number:** T 0042/16 - 3.3.06

**Application Number:** 08170098.1

**Publication Number:** 2192230

**IPC:** D21H21/30, B41M5/52, C09D11/00

**Language of the proceedings:** EN

**Title of invention:**
Optical brightening compositions for high quality inkjet printing

**Patent Proprietor:**
Clariant Finance (BVI) Limited
International Paper Company

**Opponents:**
Pi, Rafael
3V Sigma S.p.A.

**Headword:**
Optical brightening compositions/Clariant

**Relevant legal provisions:**
EPC Art. 54, 56

**Keyword:**
Novelty - (yes)
Inventive step - non-obvious modification (yes)

**Decisions cited:**

**Catchword:**

Europäisches Patentamt
European Patent Office
Office européen des brevets

**Beschwerdekammern**

**Boards of Appeal**

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**Case Number: T 0042/16 - 3.3.06**

# D E C I S I O N
# of Technical Board of Appeal 3.3.06
# of 3 May 2019

| | |
|---|---|
| **Appellant I:**<br>(Patent Proprietor) | Clariant Finance (BVI) Limited<br>Citco Building, Wickhams Cay<br>P.O. Box 662<br>Road Town, Tortola (VG) |
| | International Paper Company<br>Cincinnati Technology Center 6285<br>Tri-Ridge Boulevard<br>Loveland, OH 45140 (US) |
| **Representative:** | Ricker, Mathias<br>Wallinger Ricker Schlotter Tostmann<br>Patent- und Rechtsanwälte Partnerschaft mbB<br>Zweibrückenstrasse 5-7<br>80331 München (DE) |
| **Appellant II:**<br>(Opponent 1) | Pi, Rafael<br>C/ Veneçuela, 67 (La Torreta)<br>08430 La Roca del Vallès (ES) |
| **Appellant III:**<br>(Opponent 2) | 3V Sigma S.p.A.<br>Via Fatebenefratelli 20<br>20121 Milano (IT) |
| **Representative:** | Minoja, Fabrizio<br>Bianchetti Bracco Minoja S.r.l.<br>Via Plinio, 63<br>20129 Milano (IT) |
| **Decision under appeal:** | **Interlocutory decision of the Opposition Division of the European Patent Office posted on 13 November 2015 maintaining European Patent** |

**No. 2192230 in amended form**

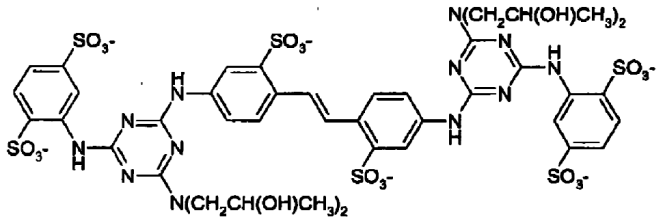
**Composition of the Board:**

| | |
|---|---|
| **Chairman** | J.-M. Schwaller |
| **Members:** | P. Ammendola |
| | C. Heath |

## Summary of Facts and Submissions

I. Appeals were filed by the proprietor (appellant I) and by both opponents 1 and 2 (appellants II and III) against the interlocutory decision of the opposition division to maintain the patent in amended form on the basis of the then Auxiliary Request 1, claim 1 of which reads:

"1. *Sizing composition for optical brightening of substrates for ink jet printing comprising*
*(a) at least one binder,*
*(b) at least one divalent metal salt,*
*(c) water, and*
*(d) at least one optical brightener of formula (1)*



(1)

$[M^+]_n[X^+]_{6-n}$

*in which*
*M and X are identical or different and independently from each other selected from the group consisting of hydrogen, an alkali metal cation, ammonium, ammonium which is mono-, di- or trisubstituted by a C1-C4 linear or branched alkyl radical, ammonium which is mono-, di- or trisubstituted by a C1-C4 linear or branched hydroxyalkyl radical, or mixtures of said compounds, and*
*n is in the range from 0 to 6, characterized in that said divalent metal salt(s) are selected from the group consisting of calcium chloride, magnesium chloride, calcium bromide, magnesium bromide,*

*calcium iodide, magnesium iodide, calcium nitrate, magnesium nitrate, calcium formate, magnesium formate, calcium acetate, magnesium acetate, calcium sulphate, magnesium sulphate, calcium thiosulphate or magnesium thiosulphate or mixtures of said compounds,*
*wherein the concentration of divalent metal salt in the sizing composition is between 1 and 100 g/l.*"

II. With its statement of grounds of appeal, the proprietor requested that the patent be maintained as granted.

III. With its statement of grounds of appeal opponent 1 argued that the subject-matter of the maintained claim 1 was not allowable in view of Article 56 EPC, in particular over the combination of the prior art disclosed in E12 (EP 1378545 A1) and E2 (US 6,207,258 B1).

IV. With its statement of grounds of appeal opponent 2 argued that the subject-matter of the maintained claim 1 was not allowable in view of Articles 54 and 56 EPC, in particular in view of the prior use of a product called OPTIBLANC®XL for preparing a paper for public sale (allegedly proved by means of several documents) which anticipated the claimed subject-matter.

V. With its reply of 21 March 2016 the proprietor, *inter alia*, filed two sets of amended claims labelled Auxiliary Requests 2 and 3.

VI. In a communication the board expressed, *inter alia*, the preliminary opinion that the evidence provided with respect to the alleged prior use was insufficient to render publicly available the chemical composition of the product used.

VII. At the oral proceedings of 3 May 2019, at which only the proprietor and opponent 1 were represented, the proprietor withdrew its request to maintain the patent as granted. Novelty was no longer contested by the present opponent, but inventive step starting from E12 in combination with E2. Both parties agreed that the problem to be solved was to provide an alternative sizing composition.

VIII. After closure of the debate, the chairman established the parties' final requests to be as follows:

Opponents 1 and 2 requested that the decision under appeal be set aside and the patent be revoked.

The proprietor requested that the opponents' appeal be dismissed so that the patent be maintained in the form upheld by the opposition division (**new Main Request**), or that the patent be maintained in amended form with the claims according to one of Auxiliary Requests 2 or 3 filed with letter of 21 March 2016.

IX. The opponents' submissions can be summarised as follows:

Opponent 1 argued at the oral proceedings that the aqueous composition disclosed in Example 5 of E12, which contained the sodium salt of an hexasulfonic optical brightener (hereinafter **Na hexasulfonic OBA**) in accordance with formula 1 of maintained claim 1, was the closest prior art. The subject-matter of maintained claim 1 only represented an alternative thereto. The offered alternative was obvious when considering in combination E12 and E2. Opponent 1 additionally maintained that no prejudice existed for the skilled formulator of paper sizing compositions as to the

possibility of adding e.g. calcium salts in solutions of hexasulfonic OBAs, such as the Na hexasulfonic OBA present in Example 5 of E12.

Opponent 2 disputed the novelty of the subject-matter of claim 1 at issue against E12 as well as the prior use of the product called OPTIBLANC®XL for the preparation of a paper for public sale. As to the objection of lack of inventive step, it also combined the prior art disclosed in E12 with that in E2 and disputed the existence of any prejudice that water-soluble brighteners such as hexasulfonic OBA could be prone to precipitation in the presence of calcium.

The proprietor held document E2 *per se* to lead away from the modification of the closest prior art required to arrive at the claimed composition. E2 moreover reminded the skilled reader of the well-known prejudice (also indicated in paragraph [0007] of the patent in suit and confirmed by several other documents) that anionic water-soluble brighteners would be prone to precipitation in the presence of calcium.

## Reasons for the Decision

*New Main Request (patent as upheld by the opposition division)*

1. Novelty (Article 54 EPC)

1.1 Opponent 2 argued that the subject-matter of claim 1 at issue was anticipated either by disclosure in E12 or by the prior use of the compound OPTIBLANC®XL in preparing a paper for public sale. None of these objections are found convincing for the following reasons.

1.2 For the board the skilled reader of maintained claim 1 has to consider that it defines a "*sizing composition*" that must be suitable "*for optical brightening of substrates for ink jet printing*" and that comprises "*water*". Hence, it is apparent that the claimed composition must be liquid and that the described hexasulfonic OBA of formula (1), must be present therein in a substantial amount so as to enable the production of a sized paper for ink jet printing wherein such OBA measurably contributes to the paper's optical brightness.

Moreover, the claim explicitly requires an amount of "*1 to 100 g/l*" of divalent metal salt.

Hence, the definition of the claimed composition inevitably implies the simultaneous presence of:

- a substantial amount of (at least one of) the monovalent cations (hereinafter **the monovalent cations**) specified as "$M^+$" and "$X^+$" in the OBA of formula (1) and
- a substantial amount of the divalent cations (hereinafter **the divalent cations**) that are present in the "*divalent metal salt(s)*" required to be at a concentration of "*between 1 and 100 g/l*".

1.3 As to the disclosure of E12, opponent 2 referred in particular to the combination of

- paragraph [0009] (which describes aqueous liquid compositions containing hexasulfonic OBAs according to formulae (1) or (2) of E12), with
- paragraph [0013] (reading "*[t]he alkali salt of the compound of the above formula (1), includes an alkaline metal salt, alkaline earth metal salt and an ammonium salt. An alkaline metal salt is*

*preferred and lithium salt and sodium salt are more preferred*"), and with

- paragraph [0020] (in particular the sentence bridging pages 4 and 5, reading "*[c]ontent of the inorganic salt in the present invention is the total content of alkaline metal chloride or alkaline earth metal chloride (such as sodium chloride, potassium chloride and calcium chloride) and alkaline metal sulfate (such as sodium sulfate) or alkaline earth metal sulfate and, most typically, it means contents of sodium chloride and sodium sulfate*").

For opponent 2, the combination of these passages of E12 would disclose, *inter alia*, aqueous liquid compositions containing both:

(a) an alkali metal salt (e.g. the lithium or sodium salt) of the hexasulfonic OBA according to formula (2) of E2, and

(b) a divalent metal salt (e.g. calcium chloride or an alkaline earth metal sulfate),

and these combination of ingredients would also imply the simultaneous presence in the aqueous composition of a substantial amount of both the monovalent and the divalent cations.

1.4 For the board the combination of the teachings in the above-referred passages of E12 does not directly and unambiguously disclose the simultaneous presence of the above-defined (a) and (b) because in order to arrive at the combination of e.g. a Na salt of the hexasulfonic OBA with e.g. calcium chloride, it is necessary to combine two selections between the two lists of alternatives respectively given in paragraph [0013] (for the "alkali salt" of the hexasulfonic OBA) and in paragraph [0020] (for "the inorganic salt").

Further, E12 indisputably only discloses how to prepare compositions in which the same kind of cation forms both the "inorganic salt" and the "alkali salt" of the hexasulfonic OBA (see the preparation methods used in the examples of E12). Nor does E12 disclose any other passage directing to the simultaneous presence in these prior art compositions of specifically (at least) one monovalent cation and (at least) one divalent cation, as required in claim 1 at issue.

Hence E12 does not provide the direct and unambiguous disclosure of the simultaneous presence of (substantial amounts of) both monovalent cations and divalent cations, and so at least this feature of the claimed sizing composition is not directly and unambiguously disclosed as present in the prior art disclosed in E12.

1.5 As to the alleged prior use of OPTIBLANC®XL, as already stressed at point 3.2 of the communication to the parties of 28 March 2019, the board had come to the preliminary conclusion that the prior use allegedly demonstrated by several documents filed by Opponent 2 only related to the use of OPTIBLANC®XL (allegedly a composition in accordance with maintained claim 1) for the preparation of "Data Copy" paper for public sale. In other words, the written submissions of opponent 2 had been found to imply that the public had unrestricted access to such paper only, and not to the OPTIBLANC®XL product *per se*. The board had also found that alone the chemical analysis of the paper product would not allow to identify with certainty the chemical composition of the (allegedly novelty destroying) OPTIBLANC®XL brightener.

Since opponent 2 has not disputed these findings (it has provided no further submissions as to the substance of the case after having been informed of the board's preliminary opinion), it remains evident to the board that, even if the evidence provided would actually prove that "Data Copy" paper prepared by using OPTIBLANC®XL was indeed commercially available prior to the priority date of the patent in suit, this fact would not be sufficient to demonstrate that also the formulation used for producing such paper had been rendered publicly available before that date.

Hence, the board comes to the conclusion that the alleged prior use of OPTIBLANC®XL for the preparation of "Data Copy" paper for public sale, cannot possibly render plausible the objection of lack of novelty of the subject-matter of maintained claim 1.

1.6 It follows that none of the novelty objections justify to reverse the finding of the opposition division that the upheld version of the patent (now new Main Request) complies with the requirements of Article 54 EPC.

2. Inventive step (Article 56 EPC)

2.1 The closest prior art

It is common ground among the parties that the most suitable starting point for the assessment of inventive step for the subject-matter of maintained claim 1 is represented by the aqueous composition of Example 5 of E12, which undisputedly is a sizing composition for paper for ink jet printing which comprises sodium chloride, an Na hexasulfonic OBA falling under formula (1) defined in claim 1 at issue, and starch (i.e. a binder).

The subject-matter of claim 1 thus differs from this prior art by the presence of between 1 and 100 g/l of one or more of the specified divalent metal salts.

2.2 The technical problem solved

It was also common ground among the parties that the technical problem plausibly solved vis-à-vis this prior art was the provision of an alternative sizing composition for optical brightening of paper for ink jet printing.

2.3 The solution and its success

The solution to this technical problem is the aqueous composition according to claim 1 at issue that is in particular characterised in that it comprises between 1 and 100 g/l of one or more of the specified divalent metal salts. That the claimed composition successfully solves the technical problem of providing an alternative to the closest prior art is self-evident.

2.4 Non-obviousness

The assessment of inventive step for the subject-matter of maintained claim 1 boils down to the question whether a skilled person who aims at providing a further sizing composition for optical brightening of paper for ink jet printing would have considered it obvious to modify the composition of example 5 of E12 by incorporating therein between 1 and 100g/l of one of the divalent metal salts listed in maintained claim 1.

2.4.1 Opponent 2 submitted that E12 itself would contain a pointer to such modification, since paragraph [0018] therein described the possibility of salting out with

calcium chloride the hexasulfonic OBAs mentioned in this citation.

For the board, a composition formed by redissolving the precipitated product of this salting out step is expected to only comprise the calcium salt of the hexasulfonic OBA. Hence, the teaching in [0018] allows to convert an initial acid or Na hexasulfonic OBA into the corresponding Ca hexasulfonic OBA, but this operation does not necessarily imply the simultaneous presence of the substantial amounts of monovalent cations also required by claim 1 as maintained in the resulting composition. Hence, the only modification that paragraph [0018] of E12 might render obvious is a composition in which substantially all the Na cations present in Example 5 are replaced e.g. by Ca cations, but such modification does not lead to the subject-matter of claim 1 under consideration.

2.4.2 As to the further argument that the teaching of E2 would render obvious the modification of Example 5 of E12 required to arrive at the claimed composition, the board notes that E2 (column 4, lines 31 to 47, and column 6, lines 1 to 4) indeed suggests the addition to aqueous sizing compositions of divalent metal salts such as calcium and magnesium chlorides for improving the inkjet print quality of the sized paper. E2 (column 11, lines 9 to 14) also explicitly acknowledges the possible presence in the sizing compositions of "optical brightening agents".

However, the board is convinced that the following statement in E2, column 10, lines 24 to 35 clearly warns the skilled person of problems possibly associated with the addition of any strongly anionic (water) soluble materials to compositions containing

the divalent metal salt: *"The salt-containing sizing composition preferably contains a carrier agent and can also be used with other conventionally used sizing composition additives. [..] Constraints on the addition of materials with the salt-containing composition are compatibility and performance. Some materials, such as solutions of anionic polymeric styrene maleic anhydride sizing agents and strongly anionic soluble materials, e.g. strongly anionic rosin soap sizing agents, are not compatible with the divalent metal salts of this invention. Those mixtures which lead to coagulation and precipitation of the added material such that the paper maker can no longer make paper are not suitable"*.

2.4.3 The board thus finds unconvincing the allegation of opponent 1 that such statement, by specifically identifying "strongly anionic rosin soap sizing agents" as examples ("e.g.") for the problematic "strongly anionic soluble materials", would indicate to the skilled reader of E2 that the mentioned problems only related to features (allegedly the presence of carboxylate groups) that were absent in hexasulfonic OBAs. Such allegation implicitly attributes to the word "e.g." in the above statement the different and much narrower meaning of "of the same chemical class as" (or at least of "similar to").

2.4.4 In view of the above the board, also considering that the Na hexasulfonic OBA present in Example 5 of E12 is undisputedly a strongly anionic (water) soluble material, comes to the conclusion that E2 rather leads the skilled reader away from the possibility of also adding the divalent metal salt into the sizing composition of Example 5 of E12. Hence, the combination of E12 with E2 suggested by the opponents for the skilled person searching for further sizing composition

cannot render obvious the addition of divalent metal salts into the composition of the prior art of departure.

2.4.5 The above conclusion is based on the teaching of E12 and E2 only. Thus, it is unnecessary for the board to decide on the disputed existence of the prejudice stated in the patent in suit to be well-known (see paragraph [0007], namely the disputed common general knowledge of the skilled person that water-soluble brighteners would be prone to precipitation in the presence of calcium. Accordingly, it is also unnecessary to provide any details as to the parties' submissions in this respect.

2.5 The board therefore finds that the objection of lack of inventive step raised by the opponents against the subject-matter of maintained claim 1 is not convincing and, thus, does not justify to reverse the finding of the opposition division that the upheld version of the patent complies with the requirements of Article 56 EPC.

**Order**

**For these reasons it is decided that:**

*The appeals are dismissed.*

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated