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Datasheet for the decision of 4 September 2020

Case Number: T 0042/18 - 3.3.02

Application Number: 08878797.3

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Language of the proceedings: EN

Title of invention:
SURFACE COATING COMPOSITION FOR INKJET MEDIA

Patent Proprietor:
Hewlett-Packard Development Company, L.P.

Opponent:
Omya International AG

Headword:

Relevant legal provisions:
EPC Art. 54(3), 56, 123(2)
RPBA Art. 12(4)

Keyword:
Amendments - added subject-matter (no)
Novelty - (yes)
Inventive step - (yes)
Late-filed document - admitted (no)

Decisions cited:
G 0007/93

Catchword:

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Beschwerdekammern

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Case Number: T 0042/18 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 4 September 2020

Appellant: (Opponent)	Omya International AG Baslerstrasse 42 4665 Oftringen (CH)
Representative:	Maiwald Patent- und Rechtsanwaltsgesellschaft mbH Elisenhof Elisenstraße 3 80335 München (DE)
Respondent: (Patent Proprietor)	Hewlett-Packard Development Company, L.P. 10300 Energy Drive Spring TX 77389 (US)
Representative:	Haseltine Lake Kempner LLP Redcliff Quay 120 Redcliff Street Bristol BS1 6HU (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 2 November 2017 concerning maintenance of the European Patent No. 2356183 in amended form.**

Composition of the Board:

Chairman	P. O'Sullivan
Members:	M. Maremonti
	L. Bühler

Summary of Facts and Submissions

I. The appeal of the opponent (hereinafter "appellant") lies from the decision of the opposition division, according to which European patent 2 356 183 (hereinafter "the patent") in its form modified on the basis of the then pending first auxiliary request, and the invention to which it relates, meets the requirements of the EPC.

II. The request found allowable by the opposition division contains nine claims, independent claim 1 of which reads as follows:

"*1. A surface coating composition for inkjet media, comprising:*

a binder including at least one of water soluble polymers, water dispersible polymers, or combinations thereof;
a pigment including at least one of low surface area inorganic pigments, organic pigments, porous inorganic pigments, or combinations thereof;
an optical brightening agent;
a metallic salt; and
a chemical chelant; and
wherein the chelant is selected from the group consisting of organic phosphonate, organic phosphonate salts, phosphate, phosphate salts, carboxylic acids, carboxylic acid salts, dithiocarbamates, dithiocarbamate salts, sulfites, phosphines, and combinations thereof and wherein an amount of the chelant in the composition ranges from about 5 kg per metric ton to about 15 kg per metric ton of paper substrate as measured with a base paper substrate of 100 gsm; and

wherein a cation of the metallic salt is selected from the group consisting of potassium, sodium, calcium, magnesium, barium, aluminum, strontium, and combinations thereof; wherein an anion of the metallic salt is selected from the group consisting of fluoride, chloride, iodide, bromide, nitrate, chlorate, acetate and combinations thereof, wherein the metallic salt is water soluble and wherein an amount of the metallic salt in the composition ranges from about 5 kg per metric ton to about 15 kg per metric ton of paper substrate as measured with a base paper substrate of 100 gsm."

Claim 5 is directed to an inkjet printable paper, comprising a surface coated with the composition of claim 1. Claim 6 is directed to a method of making surface-treated inkjet media by using the composition of claim 1. Dependent claims 2 to 4 and 7 to 9 define specific embodiments of the composition of claim 1 and of the method of claim 6, respectively.

III. The following documents were among those cited during the opposition proceedings:

D1: WO 2009/110910 A1

D2: WO 2009/154898 A1

D3: WO 2007/053681 A1

D6: WO 01/70644 A1

D7: WO 00/69977 A1

D8: US 6 302 999 B1

The opposition division came to, *inter alia*, the following conclusions with regard to the then pending first auxiliary request:

- The requirements of Articles 84, 123(2) and (3) EPC were met.
- The subject-matter of claims 1 and 6 was novel over the disclosures of D1 and D2.
- The subject-matter of claims 1 and 6 involved an inventive step in view of D3 taken as the closest prior art.

Additionally, the opposition division decided not to admit document D8, filed by the appellant by letter dated 31 July 2017, into the proceedings.

IV. In its statement of grounds of appeal, the appellant contested the reasoning of the opposition division and argued that the claimed subject-matter infringed Article 123(2) EPC, lacked novelty over D1 and D2 and lacked an inventive step in view of D3 taken as the closest prior art. In a subsequent submission dated 10 July 2019, the appellant requested that D8 be admitted into the proceedings.

V. In its reply to the appeal, the patentee (hereinafter "respondent") rebutted the arguments of the appellant and submitted that the claim request found allowable by the opposition division (re-submitted in appeal as the main request, see below) met the requirements of the EPC.

The respondent also filed sets of claims as first to fourth auxiliary requests and, in a subsequent submission, sets of claims as fifth to tenth auxiliary requests.

VI. The parties were summoned to oral proceedings. In preparation therefor, the board issued a communication pursuant to Article 15(1) RPBA 2020, in which it expressed, *inter alia*, the preliminary opinion that the subject-matter of the main request met the requirements of Article 123(2) EPC.

VII. Oral proceedings before the board were held on 4 September 2020.

VIII. Final requests

The appellant requested that the decision under appeal be set aside and the patent be revoked. It also requested that the first to third and fifth to tenth auxiliary requests not be admitted into the proceedings. The appellant further requested that document D8 be admitted into the proceedings.

The respondent requested that the appeal be dismissed, implying that the patent be maintained on the basis of the claims of the first auxiliary request underlying the appealed decision. This request had been re-filed as the main request with the reply to the statement of grounds of appeal.

Alternatively, the respondent requested that the patent be maintained on the basis of the first to tenth auxiliary requests, whereby the first to fourth auxiliary requests were filed with the reply to the statement of grounds of appeal, and the fifth to tenth auxiliary requests by letter dated 2 July 2020.

The respondent also requested that the decision of the opposition division not to admit D8 be upheld.

IX. The arguments of the appellant, insofar as relevant to the present decision, are summarised as follows:

Article 123(2) EPC:

- The combination of features defined in claim 1 of the main request was not directly and unambiguously disclosed in the application as filed.
Specifically:

- The added chelants and salts were not disclosed in the application as filed, pages 16 and 17, as to be *in the composition* but *in the inkjet media.*
Moreover, they were expressed in terms of kilograms *per metric ton of the inkjet media* and not *per metric ton of paper substrate* as defined in claim 1 at issue. The examples did not support the claimed subject-matter either, since the composition of the chelant employed therein (Extra-White®) was not specified.

- The disclosure on pages 6 and 7 of the application as filed also did not serve as an appropriate basis for the claimed subject-matter. Here, sulfites and phosphines as chelants were limited to those with S-O and P-O bonds, said to be compounded in chemical chelant compositions (page 7, lines 20 to 21).

- Additionally, the application as filed (page 7, lines 28 to 30) recited that the chemical chelant ranged from "*about 5 kg/T to 15 kg/T of paper substrate*", contrary to the range of from about 5 kg per metric ton to "*about*" 15 kg per metric ton of paper substrate as defined in claim 1. No basis for the insertion of the term "*about*" preceding "*15 kg*" was present in the application as filed.

- The disclosure of the amount of metallic salts on page 6, lines 22 to 24 of the application as filed did not mention that the amounts were per metric ton of *"paper substrate"* as defined in claim 1.

- Moreover, the claimed list of metallic salts had been selected from several lists of cations and one list of anions from page 6 of the application as filed.

- It had to be concluded that the subject-matter of the main request did not meet the requirements of Article 123(2) EPC.

Novelty:

- Documents D1 and D2 were relevant to the novelty of the subject-matter of claim 1 pursuant to Article 54(3) EPC.

- Both documents disclosed a composition, comprising all of the features of claim 1 in combination and were thus novelty destroying for the subject-matter thereof.

- In particular, D1 disclosed on pages 2 and 9 that a filler could be included in the coating composition. The term *filler* was a synonym of the term *pigment* as required by claim 1. This was confirmed by paragraph [0011] of the patent. Moreover, the fillers disclosed on page 7, lines 23 to 26 of D1 overlapped with the pigments mentioned in claim 4 of the main request.

- The amounts of chelant and salt mentioned in claim 1 represented the amounts of these substances after having applied the coating composition onto paper. Thus, they did not impart any limitation to the

amounts thereof present in the claimed composition. The respondent's argument that the amounts recited implied a relative weight ratio between these two ingredients in the composition was not supported by the application as filed.

- Even assuming that the claimed amounts imparted a limitation as to the relative amount of chelant to salt in the defined composition, such a relative amount was disclosed in D1 (page 9, lines 8 to 16).

- The same argumentation applied to D2, which equally disclosed all of the features of claim 1, e.g. in paragraph [0111]. The inclusion of pigments in the coating composition was explicitly disclosed in paragraph [0115].

- It had to be concluded that the subject-matter of claim 1 lacked novelty over D1 and D2.

Inventive step:

- Document D3 represented the closest prior art. The subject-matter of claim 1 differed from the composition disclosed in D3 in that a chelant was included.

- No technical effect could be derived from this distinguishing feature. Figure 1 of the patent demonstrated that a composition including 20 kg/T of chelant, i.e. an amount outside the claimed range, imparted a higher CIE whiteness when compared to compositions containing an amount of chelant falling within the claimed range. Moreover, the nature of the chelant was not even specified. It was thus not plausible that a technical effect

would have been obtained across the whole claimed scope.

- Even assuming a technical effect was attributable to the chelant, it was well known to the skilled person, e.g. from D6 and D7, that metal contaminants such as iron quenched the effectiveness of optical brightening agents (OBAs) generally used to achieve high paper whiteness. This problem was also identified in the patent (paragraph [0006]).

- Both D6 and D7 disclosed the treatment of kaolin, i.e. a pigment also used in the patent, with a chelant, to remove iron impurities said to be responsible for the OBA quenching effect. Thus, D6 and D7 disclosed the same solution as proposed in the patent to solve the same problem.

- The allegation of the respondent that such a chelant would have been washed away in the treatments disclosed in D6 and D7 was not supported by the disclosures of these documents. It had to be assumed that at least some of the chelant remained in the kaolin (e.g. by adsorption), which was then used in a paper coating composition.

- Aiming at increasing whiteness, the skilled person would have combined D3 with either D6 or D7 and thereby would have arrived at the claimed subject-matter.

- It had to be concluded that the the subject-matter of the main request lacked inventive step.

Admittance of D8:

- The opposition division decided not to admit D8 because it erroneously considered this document less relevant than D6 and D7.

- D8 disclosed the use of a chelant, said to remain in the composition. Moreover, calcium carbonate was used as the pigment, i.e. the same pigment as that used in the examples of the closest prior art D3.

- Since D8 was thus more relevant than D6 or D7, the decision of the opposition division was to be reversed and D8 was to be admitted into the proceedings.

X. The arguments of the respondent, insofar as relevant to the present decision, are summarised as follows:

Article 123(2) EPC:

- The combination of features as defined in claim 1 was disclosed on pages 6 and 7 of the application as filed.

- The claimed amounts of chelant and salt were disclosed in a consistent manner throughout the application as filed and in particular were supported by the examples, see tables on pages 13 and 14. The statement on page 7, lines 10 to 12 confirmed that the amounts were "*in the composition*", as specified in claim 1.

- It had to be concluded that the subject-matter of the main request fulfilled the requirements of Article 123(2) EPC.

Novelty:

- Neither one of D1 and D2 disclosed a composition, comprising all of the features of claim 1 in combination.

- Claim 1 specified that the pigment had specific features concerning e.g. its surface area and porosity. D1 merely disclosed the possibility of including an inorganic filler. The term *filler* was more generic than the term *pigment* as mentioned in claim 1. Solely for this reason, claim 1 was novel over D1.

- The examples of D1 disclosed compositions not including any filler. The examples had to be regarded as stand-alone disclosures that could not be altered to attack novelty.

- A number of selections within D1 was necessary to arrive at the claimed composition.

- The same arguments also applied to D2 which was less relevant than D1.

- It had to be concluded that the subject-matter of claim 1 was novel over D1 and D2.

Inventive step:

- Document D3 represented the closest prior art. The subject-matter of claim 1 differed from the composition disclosed in D3 in that a chelant was included in a given amount. This amount was a limiting feature of the claimed composition, at least as far as its ratio to the amount of salt was concerned.

- Figure 1 of the patent demonstrated that a composition comprising all of the features of claim 1 had a higher CIE whiteness as compared to compositions not including any chelant, representative of D3. Moreover, the amount of OBA required in the composition could be reduced. The objective technical problem was to be formulated accordingly.

- The skilled person aiming at improving whiteness would have simply increased the OBA content of the compositions of D3. In fact, D3 was silent as to the negative effect of impurities contained within salts on the effectiveness of OBAs. In doing this, the skilled person would have encountered the "greening" effect problem, described in the patent, paragraph [0006].

- The skilled person searching for a solution to this problem would not have looked to D6 or D7. These documents concerned the treatment of kaolin to remove impurities, whereas the examples of D3 did not use kaolin but rather employed calcium carbonate as the pigment.

- Even taking D6 and D7 into account, the skilled person would not have arrived at the claimed composition. D6 taught a two-step kaolin bleaching treatment. An optional further step involved treatment with a complexing agent which may comprise a chelant. Moreover, subsequent to said optional further step, D6 taught a kaolin washing step, which removed the chelant. Therefore, even combining the composition of D3 with a kaolin treated according to D6, the claimed composition would not have been obtained.

- The same applied to D7, which also taught the treatment of kaolin with a complexing agent followed by dewatering, washing and drying steps.

- Even assuming that the chelant used in D6 and D7 would have remained in the kaolin pigment, the skilled person would have refrained from using such a pigment in the composition of D3. In fact, the latter contained metallic salts used to fix the ink on paper. The skilled person would have assumed that the presence of chelants would have hindered the salts from performing their function. Additionally, none of D3, D6 and D7 mentioned that metallic salts could contain iron or copper impurities as taught in paragraph [0006] of the patent. No motivation was present to combine D3 with either D6 or D7.

- It had to be concluded that the subject-matter of the main request involved an inventive step.

Admittance of D8:

- D8 was a late-filed document and was less relevant than D6 and D7. This was confirmed by the fact that D8 was not even mentioned in the statement of grounds of appeal but only introduced later. Moreover, D8 taught the use of chelants to reduce the content of heavy metals in the pulp, i.e. when producing paper, see columns 6 and 7. When disclosing paper coating compositions in column 8, D8 was silent as to the use of chelants.

- The decision of the opposition division not to admit D8 into the proceedings was thus correct and should be upheld.

Reasons for the Decision

Main request - claim 1 - compliance with Article 123(2) EPC

1. Claim 1 of the main request (II above) has been amended compared to claim 1 as filed in that the following features have been added:

"*wherein the chelant is selected from the group consisting of organic phosphonate, organic phosphonate salts, phosphate, phosphate salts, carboxylic acids, carboxylic acid salts, dithiocarbamates, dithiocarbamate salts, sulfites, phosphines, and combinations thereof and wherein an amount of the chelant in the composition ranges from about 5 kg per metric ton to about 15 kg per metric ton of paper substrate as measured with a base paper substrate of 100 gsm; and*

wherein a cation of the metallic salt is selected from the group consisting of potassium, sodium, calcium, magnesium, barium, aluminum, strontium and combinations thereof; wherein an anion of the metallic salt is selected from the group consisting of fluoride, chloride, iodide, bromide, nitrate, chlorate, acetate and combinations thereof, wherein the metallic salt is water soluble and wherein an amount of the metallic salt in the composition ranges from about 5 kg per metric ton to about 15 kg per metric ton of paper substrate as measured with a base paper substrate of 100 gsm".

1.1 The appellant argued (IX above) that the added features were not directly and unambiguously disclosed in the application as filed.

1.2 The board disagrees. The application as filed recites on page 6, lines 7 to 13 that the metallic salts may

include the cations and the anions as specified in claim 1. Here, no selection has been made. Rather all recited cations and anions have been included in claim 1. The disclosure on page 6 continues from line 16 to line 24 by specifying the amount of such metallic salts in the composition. In lines 22 to 24, it is stated that in an embodiment, "*the amount of metallic salts in the composition ranges from about 5 kg/T to about 15 kg/T as measured with a base paper substrate of 100 gsm*". The appellant argued that this passage did not specify that the amounts referred to the weight per ton of paper substrate. However, the range of from about 5 kg/T to about 15 kg/T indicated on page 6 has to be seen as a preferred embodiment of the broader range mentioned in the immediately preceding passage from line 19 to line 22 on the same page, stating that the amount of metallic salt ranges from 1 to 25 "*kg per metric ton (T) of dry base paper stock*". It is thus clear that the claimed range refers to the weight per ton of paper substrate. This is further confirmed on page 7, lines 10 to 12, which states that "*Throughout the instant disclosure, amounts of OBAs, chelants or metallic salts are provided in units of kg/T* ***of base paper substrate***" (emphasis added by the board).

1.3 Page 7 of the application as filed then discloses from line 17 to line 30 the chelant used in the coating composition and its amount. The board acknowledges that the preferred weight range disclosed for the chelant in lines 29 to 30 is said to be "*from about 5 kg/T to 15 kg/T of paper substrate as measured with a base paper substrate of 100 gsm*". Here, in contrast to the corresponding text in claim 1, the term "*about*" does not appear in front of the value of 15 kg/T. However, the board holds that the insertion of the term "*about*" in claim 1 does not add any new matter in the sense of

Article 123(2) EPC. The skilled person would have understood the term "*about*" preceding "5 kg/T" as applying to both of the values that follow, including "15 kg/T", since the alternative interpretation does not make technical sense.

1.4 The appellant further objected that the above passage on page 7 did not mention sulfites and phosphines in general as chelants as specified in claim 1, but was limited to sulfites and phosphines with S-O and P-O bonds, which can be compounded in chemical chelant compositions (page 7, lines 20 to 21).

However, the board notes the use of sulfites and phosphines in general as chelants in the coating composition is disclosed e.g. on page 16, lines 26 to 30 and in claim 2 of the application as filed. It is acknowledged that these passages also disclose a different amount of the chelant as compared to claim 1, since here the amount is said to range from about 5 to about 15 kg per ton of "*inkjet media*" rather than per ton of "*paper substrate*". However, there is no indication in the application as filed that the amount of the chelant is dependent on its nature. Thus, the board is satisfied that the disclosure in the application as filed of sulfites and phosphines specifically with regard to their amount per ton of inkjet media is generally applicable to all embodiments, including those described in relation to the amount of chelant per ton of paper substrate. The inclusion of sulfites and phosphines in general as chelants in the coating composition of claim 1 is therefore directly and unambiguously disclosed in the above-mentioned passages of the application as filed.

1.5 Therefore, the board concludes that the subject-matter of claim 1 of the main request does not extend beyond the content of the application as filed. The same applies to remaining claims 2 to 9, for which no separate objections under Article 123(2) EPC had been raised by the appellant.

The subject-matter of the main request thus meets the requirements of Article 123(2) EPC.

Main request - interpretation of claim 1

2. Claim 1 (II above) defines a composition comprising, *inter alia*, a chelant and a metallic salt. The amounts of these two components are said to be "*in the composition*" but are defined in claim 1 to range from about 5 kg to about 15 kg "*per metric ton of paper substrate*". Therefore, these ranges express the amounts of chelant and metallic salt on a paper substrate after the claimed composition has been applied to it.

2.1 The appellant argued (IX above) that since claim 1 was directed to a composition as such, i.e. before application to any substrate, the claimed amounts could not be seen as limiting features of the claimed subject-matter.

2.2 Contrary to the appellant's view, the board agrees with the argument of the respondent (X above) according to which the claimed amounts of chelant and metallic salt at least impart a limitation with respect to the *relative* amounts thereof. In other words, the amounts of chelant and metallic salt in the composition should be such to achieve the required values of about 5 to about 15 kg/T of paper substrate for each ingredient, once the composition is applied to the paper substrate. This implies that they should be present in the claimed composition in a weight ratio ranging from about 1:3 to

about 3:1, calculated from the upper and lower ends of respective weight ranges provided (5 kg/T:15 kg/T - 15 kg/T:5 kg/T).

Main request - claim 1 - novelty under Article 54(3) EPC

3. The appellant (IX above) objected to the novelty of claim 1 in view of both documents D1 and D2. It was undisputed that both documents represent prior art relevant only to the issue of novelty pursuant to Article 54(3) EPC.

3.1 Document D1

3.1.1 The appellant referred to page 2, lines 27 to 29 of D1, which disclosed a composition comprising all of the components mentioned in claim 1 at issue.

3.1.2 However, this passage recites that the disclosed composition "*includes metallic salts and chemical chelants. Other common size press additives such as starch, binder, filler, surface sizing agent, FWA, pH control, and other processing aid agents can also be included*". Thus, even assuming *arguendo* that a "*filler*" would be a synonym of "*pigment*" as submitted by the appellant (and disputed by the respondent), the skilled person reading this passage would have had to select the combination of a binder, a filler and a FWA (fluorescent whitening agent, synonym of OBA, see D1, page 1, lines 19 to 20) as the optional compounds to be included in the composition, to arrive at the combination of substances recited in claim 1.

3.1.3 The skilled person would have found in claim 3 of D1 (referring back to claim 1) a pointer towards the combination of a binder (starch), an OBA, a chemical chelant and a water-soluble metallic salt having a cation selected from the group consisting of potassium,

sodium, calcium, magnesium, barium, aluminum, strontium and combinations thereof, and an anion selected from the group consisting of fluoride, chloride, iodide, bromide, nitrate, chlorate, acetate and combinations thereof. However, this composition, though including a metallic salt in accordance with claim 1, does not include any filler nor specify the chemical chelant to be used.

3.1.4 A chemical chelant as defined in claim 1 at issue is disclosed in claim 9 of D1. However, this claim refers back only to claim 1 of D1, which does not specify the metal cation to be employed. Therefore, claim 9 of D1 does not disclose a composition comprising the combination of a chelant and a metallic salt as defined in claim 1, let alone the inclusion of a filler. The same chelants and metallic salts are also independently disclosed in D1 on page 4, lines 18 to 20, and page 5, lines 27 to 30, respectively. However, they are not disclosed in combination with each other, let alone in combination with a binder, an OBA and a filler.

3.1.5 The appellant also pointed to the formulation disclosed on page 9, lines 8 to 16 of D1. However, this exemplary composition, though including a binder (starch), an OBA (FWA), metallic salts and chelants, does not comprise any filler. It can thus not anticipate the composition of claim 1. Furthermore, the metallic salts are included in an amount ranging from 1 to 25 kg/T of paper substrate while the chelants are present in an amount ranging from 0.5 to 20 kg/T of paper substrate. It follows that the relative amounts of chelants to salts vary within a range much broader than the range 1:3 to 3:1 implied by claim 1 at issue (2.2 above). Thus, to arrive at the claimed relative amounts, the

skilled person would have had to make selections within the above-mentioned ranges known from D1.

3.1.6 Also the examples of D1 (tables 1 and 2 on pages 11 and 12) disclose compositions that do not contain any filler. Therefore, they also do not anticipate the composition of claim 1.

3.1.7 For the reasons set out above, even assuming that a filler as disclosed in D1 would be a synonym of a pigment, several selections would have had to be made within the disclosure of D1 to arrive at a composition comprising all features of claim 1 at issue. No direct and unambiguous pointer towards such selections is present in D1. Thus, the board concludes that the subject-matter of claim 1 is novel over D1 (Article 54(3) EPC). The same applies to remaining claims 2 to 9 which include the composition as defined in claim 1.

3.2 Document D2

3.2.1 The appellant referred to paragraph [0111] of D2, which pointed to a composition comprising all components mentioned in claim 1.

3.2.2 However, the board notes that the above-mentioned paragraph discloses a formulation containing calcium chloride and a binder (starch) together with an unspecified complexing agent and an OBA. Neither a chelant as defined in claim 1 nor a pigment are included in this formulation. Moreover, the amounts of salt and chelant are not specified.

3.2.3 Paragraph [0115] of D2 discloses that the sizing agent (which could be starch, see paragraph [0108] of D2) "*may also include one or more optional additives such as binders, pigments, thickeners, defoamers,*

surfactants, slip agents, dispersants, optical brighteners, dyes, and preservatives" and that "*a preferable pigment is calcium carbonate*". Therefore, to arrive at the combination of compounds defined in claim 1, the skilled person would have had to select a pigment among the optional additives listed in this paragraph and additionally include it in the formulation mentioned in said paragraph [0111]. However, no link between these two paragraphs is disclosed in D2.

3.2.4 Additionally, as mentioned above, said paragraph [0111] of D2 does not specify the complexing agent used in the formulation. Examples of complexing agents are disclosed from paragraph [039] to paragraph [048]. Here, the compounds of claim 1 are mentioned among others. Thus, a further selection is required to arrive at a chelant according to claim 1.

3.2.5 The amounts of salt and chelant are also not disclosed in said paragraph [0111] invoked by the appellant, let alone a relative amount between them in the composition.

Possible amounts are disclosed in paragraphs [026] and [049] of D2, for the salt and the complexing agent (chelant), respectively.

The amount of salt in paragraph [026] is said to vary from about 0.02 g/m^2 to about 4 g/m^2 (corresponding to 0.2 to 40 kg/T of paper substrate, assuming a paper substrate of 100 gsm as defined in claim 1). Preferred ranges are said to be from 0.04 g/m^2 to 2.0 g/m^2 (0.4 to 20 kg/T) or from 0.04 g/m^2 to 1.5 g/m^2 (0.4 to 15 kg/T).

In paragraph [049], D2 teaches that the amount of complexing agent varies from about 0.01 to about 100 Lb/ton of paper, corresponding to about 0.0045 to about 45 Kg/T of paper substrate.

It follows that the relative amounts of chelant to salt vary within a range much broader than the range 1:3 to 3:1 implied by claim 1 at issue (2.2 above). Thus, to arrive at the claimed relative amounts, the skilled person would have had to make selections within the above-mentioned ranges known from D2.

The appellant also pointed to claims 6 and 18 of D2. Claim 6 defines an amount of complexing agent relative to the amount of starch. No comparison with claim 1 at issue can thus be made since claim 1 requires a certain relative amount of chelant to salt (2.2 above).

Claim 18 discloses an amount of complexing agent ranging from 0.01 to about 100 Lbs/ton of recording sheet, corresponding to about 0.0045 to about 45.4 Kg/T of recording sheet. Even assuming that the indicated range include the range mentioned in claim 1 (the values are indicated per ton of recording sheet and not per ton of paper substrate as in claim 1), a selection would be required within this extremely broad range to arrive at the relative amount of chelant to salt required by claim 1 at issue (2.2 above). Moreover, claim 18 refers back to independent claim 15 defining a recording sheet coated by a composition comprising a non-specified metal salt, a non-specified complexing agent and an OBA. Neither a binder nor a pigment are included in the composition as required by claim 1 at issue.

3.2.6 Therefore, as for D1 above, several selections are required within the disclosure of D2 to arrive at a

composition comprising all of the features of claim 1 at issue. No direct and unambiguous pointer towards such selections is present in D2. Thus, the board concludes that the subject-matter of claim 1 is novel over D2 (Article 54(3) EPC). The same applies to remaining claims 2 to 9 which include the composition as defined in claim 1.

3.3 The subject-matter of the main request is thus novel over the disclosures of documents D1 and D2.

Main request - claim 1 - inventive step under Article 56 EPC

4. The closest prior art

Both parties indicated document D3 as the closest prior art. In view of the issues addressed and the paper coating compositions disclosed, the board sees no reasons to take a different stance. In fact, D3 discloses (pages 18 to 21, claim 9) a paper substrate coated with a composition comprising a binder, a pigment, an OBA and a water-soluble salt. The coated paper has a CIE whiteness of at least 130 (page 22, last paragraph). According to the examples of D3 (pages 32 to 34), calcium chloride is used as the water-soluble salt in the coating compositions.

5. The technical problem

5.1 It is common ground that the claimed subject-matter differs from the disclosure of D3 in that the latter does not disclose the inclusion of a chelant.

5.2 The appellant argued that a technical effect could not be derived from the presence of the chelant and the amount thereof as claimed. Figure 1 of the patent demonstrated that a composition including 20 kg/T of chelant, i.e. an amount outside the claimed range, had

a higher CIE whiteness than compositions containing an amount of chelant falling within the claimed range. Moreover, the exact nature of the chelant used (Extra-White®) was not even specified. Lastly, an effect was not plausible over the whole claimed scope. In the absence of any technical effect, the objective technical problem had to be seen as the provision of an alternative coating composition (statement of grounds of appeal, page 17, penultimate paragraph).

5.3 The board disagrees. The possibility that a certain technical effect over a known composition might also be obtained outside the scope of the claim does not mean that this effect is not present within the ambit of the claim.

Figure 1 of the patent shows the CIE whiteness of a coated paper substrate as a function of the salt amount, both in the presence and in the absence of a chelant in the coating composition. The reported results demonstrate that for the same salt amount, the inclusion of a chelant improves the CIE whiteness.

Figure 2 of the patent shows the CIE whiteness of a coated paper substrate as a function of the OBA amount both in the presence and in the absence of a chelant in the coating composition. The reported results demonstrate that for the same OBA amount, the inclusion of a chelant improves the CIE whiteness. In other words, a same whiteness can be achieved with a reduced amount of OBA.

The appellant has never contested that the chelant used in the examples of the patent, Extra-White®, represented a chelant falling under the compounds defined as chelants in claim 1. Nor has the appellant provided experimental evidence or convincing arguments

that the above-mentioned results might not be obtained for the various chelants defined in claim 1. Therefore, the board has no reasons to doubt that the above effect on CIE whiteness is achieved across the whole claimed scope.

5.4 In view of the results shown in the patent, the objective technical problem to be solved over the compositions of D3 is the provision of a coating composition having improved CIE whiteness while facilitating a reduction in the amount of OBA required.

6. Obviousness of the claimed solution

6.1 The appellant (IX above) invoked documents D6 and D7. Those documents disclosed the use of chelants to remove metal impurities from kaolin particulate materials. These impurities were said to be detrimental to the function of OBAs. It would have been obvious for the skilled person to combine the teaching of either of D6 and D7 with D3 to arrive at the claimed subject-matter.

6.2 The board disagrees. The patent teaches in paragraphs [0004] and [0006] that metallic salts are used in paper coating compositions to improve the image quality, in that they fix on paper the colorants present in pigmented inks. However, these salts often contain metal contaminants such as iron and copper, which quench the effect of OBAs, thus degrading brightness and whiteness. Chelants are introduced in the claimed compositions to avoid this quenching effect.

6.3 The closest prior art D3, though disclosing (4 above) a paper coating composition comprising *inter alia* metallic salts, does not address the issue of metal contaminants present therein.

6.4 D6 and D7 also do not address the issue of contaminants in metallic salts. Both documents rather disclose (D6: page 1, line 27 to page 3, line 9; D7: page 2, lines 8 to 30) methods for treating kaolin to remove impurities, especially iron impurities. These methods involve *inter alia* contacting kaolin with one or more bleaching agents followed by a treatment with a complexing agent, which can be a chelant (D6: page 8, line 19 to page 9, line 8; D7: page 3, line 30 to page 4, line 26, examples 3 and 4). The treated kaolin can be used in paper coating compositions, further comprising a binder and an OBA (D6: page 11, line 25 to page 12, line 3; D7: page 15, lines 4 to 24).

6.5 At the oral proceedings it was a matter of dispute whether (some) chelant remained in the kaolin of D6 and D7 after the treatments outlined above. If that were the case, the appellant argued, then the skilled person employing the treated kaolin of D6 or D7 in the composition of D3 would arrive at a composition according to claim 1 at issue.

The board is convinced that even assuming that the chelant would remain in the treated kaolin of D6 and D7, the skilled person would not have been motivated to use this kaolin in the composition of D3 when seeking a solution to the posed technical problem. In fact, first, D3 does not focus on kaolin as the pigment to be employed, it being mentioned only in passing on page 3, final paragraph (mentioning "*clay*") and page 25, line 1. In the examples, calcium carbonate is used instead. Second, and more importantly in the view of the board, as set out above, the composition of D3 contains metallic salts. The metal capturing effect of the chelants present in kaolin on the ink fixing function of these salts would have been unpredictable. Thus, the skilled person would have refrained from using a

chelant-containing pigment in a composition including metallic salts. When aiming to solve the posed technical problem, the skilled person would rather have increased the OBAs content in the compositions of D3 or replaced these compositions with those taught in D6 or D7. However, in both cases they would not have arrived at the claimed subject-matter.

6.6 Consequently, the claimed composition is not rendered obvious when starting from D3 as the closest prior art in view of the disclosures of D6 and D7.

7. The board comes to the conclusion that the subject-matter of claim 1 and claims 2 to 4 dependent thereon involves an inventive step within the meaning of Article 56 EPC. The same reasoning applies to claim 5 directed to an inkjet printable paper comprising a surface coated with the composition of claim 1, claim 6 directed to a method of making surface-treated inkjet media by using the composition of claim 1, and claims 7 to 9 defining specific embodiments of the method of claim 6.

Admittance of document D8

8. The appellant requested that the decision of the opposition division not to admit document D8 into the proceedings be overturned and that D8 be admitted into the appeal proceedings.

8.1 D8 was not admitted by the opposition division pursuant to Article 114(2) EPC (impugned decision, point 9).

8.2 Under Article 12(4) RPBA 2007, the board has the power not to admit, *inter alia*, evidence into the proceedings that was not admitted at the first-instance stage. The board assesses whether the first instance correctly exercised its discretion. It is not the board's task to

re-examine the case and to decide whether it would have exercised the discretion in the same way. The board overrules the decision of the first instance department only if this either failed to exercise its discretion in accordance with the right principles or exercised its discretion in an unreasonable way (G 7/93, OJ 1994, 775; reasons: 2.6). If this is not the case, the evidence concerned remains unconsidered.

8.3 Document D8 was filed on 31 July 2017, i.e. after the expiry of the opposition period. It was thus late-filed. During oral proceedings before the opposition division, the appellant conceded that D8 was not more relevant than the documents already on file (minutes of oral proceedings, point 11.1). Moreover, D8 was not addressed in the statement of grounds of appeal but only referred to in a subsequent submission (IV above).

8.4 At the oral proceedings before the board, the appellant argued instead that the decision of the opposition division was not correct. D8 was more relevant than D6 and D7 since it disclosed that the chelant remained in the composition after removing the impurities. Moreover, D8 disclosed the use of calcium carbonate, i.e. the same pigment as used in D3. Thus, the decision of the opposition division was to be reversed.

8.5 The board disagrees. D8 discloses (column 6, line 56 to column 8, line 3) the use of chelating agents in pulp production processes to decrease the incorporation of heavy metals ions into the pulp. When referring to paper coating compositions (column 8, lines 10 to 25), D8, although mentioning the use of calcium carbonate, does not disclose the inclusion of chelants. Therefore, the opposition division, when considering D8 less relevant than the other documents on file, exercised its discretion in accordance with the right principles

and on the basis of a reasonable interpretation of the disclosure thereof. Its decision not to admit D8 into the proceedings is thus upheld.

Conclusion

9. The respondent's main request is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin P. O'Sullivan

Decision electronically authenticated