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D E C I S I O N
of 7 March 1995

Case Number: T 0144/93 - 3.3.1

Application Number: 85106538.3

Publication Number: 0182962

IPC: C09D 5/29

Language of the proceedings: EN

Title of invention:
Method for the formulation and preparation of heterochromatic paints and related products

Patentee:
ROSSETTI S.p.A. - VERNICI E IDEE

Opponent:
(01) Macri Chemicals S.r.l.
(02) Akzo Nobel N.V.

Headword:
Heterochromatic paints/ROSSETTI

Relevant legal provisions:
EPC Art. 56, 123

Keyword:
"Amendments - incorporation of a feature of a dependent claim into an independent claim (admissible)"
"Inventive step (yes) - replacement of process features - non-obvious improvement"

Decisions cited:
T 0208/88 (distinguished)

Catchword:
-

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Case Number: T 0144/93 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 7 March 1995

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Decision under appeal: Interlocutory decision of the Opposition Division of the European Patent Office of 10 November 1992, posted on 2 December 1992 concerning maintenance of European patent No. 0 182 962 in amended form.

Composition of the Board:

Chairman: A. J. Nuss
Members: P. Krasa
J. A. Stephens-Ofner

Summary of Facts and Submissions

I. European patent No. 0 182 962 concerning a method for the formulation and preparation of heterochromatic paints and related products and based on the application No. 85 106 538.3 was granted on the basis of thirteen claims.

II. Two notices of opposition were filed against the European patent, raising objections under Article 100(a), (b), and (c) EPC, citing a number of documents in support, of which finally only the document

(1) US-A-3 458 328

remained important.

III. By a decision delivered orally on 10 November 1992, with written reasons posted on 2 December 1992, the Opposition Division maintained the patent in amended form on the basis of twelve claims submitted during oral proceedings on 10 November 1992, Claim 1 of which reads:

"Method for the formulation and preparation of heterochromatic paints and related products consisting of a dispersion of colour particles in an aqueous dispersing medium, the method comprising reacting one or more base mediums containing an anionic cellulose thickener, each of said base mediums, when more than one is used, being of a different colour, with a reactive medium comprising an inorganic salt, characterised in that an inorganic salt of a heavy or trivalent metal is used and calcium carbonate is added immediately to the reaction product to neutralize excess cationic salts,

said inorganic salt being used in an amount sufficient to form reaction products consisting essentially of nonsoluble precipitated colour particles."

In its decision, the Opposition Division found in essence

- that the European patent as amended complied with the requirements of Article 123 EPC;
- that its subject-matter had been sufficiently disclosed and was not anticipated by the cited documents;
- that the most relevant state of the art was disclosed in the document (1), in particular in Example XI, from which the subject-matter of the patent in suit differed only by the application of calcium carbonate instead of a 10% ammonia solution in the neutralization step;
- that the comparative tests in the declaration of Mr. Lunghini, submitted by the Respondent (patent Proprietor) on 12 October 1992 (Lunghini-Declaration), demonstrated the "key-position" of calcium carbonate in respect to a surprising, improved storage stability; and

concluded that the subject-matter of the patent as amended involved an inventive step.

IV. The Appellant (Opponent 01) lodged an appeal against this decision. He submitted in writing and orally

- that the amended claims also covered the preparation of gel-like, hydrated coloured particles, whereas the file history demonstrated that only the preparation of "solid particles", the only ones which could maintain different shapes, was aimed at;

- that neutralization with calcium carbonate had been claimed only in connection with the particular process of Claim 9 as granted and that incorporating this feature in the processes of Claim 1 amounted to an extension of the scope of the latter; and
- that, finally, the alleged stabilising effect of calcium carbonate had not been originally disclosed, but was discovered only later, which resulted in a violation of Article 123(2) EPC.

Furthermore, the Appellant submitted that the subject-matter of the claims as amended did not involve an inventive step, since the neutralization of the reaction mixture was disclosed in document (1), and as $CaCO_3$ was a well known and commonly used base and filler material. He contested the alleged all-importance of $CaCO_3$ with reference to, inter alia, a technical report by Professor Botteghi, dated 27 July 1993 (Botteghi-Declaration), and a declaration of Mr. Cervellati, dated 28 July 1993 (Cervellati-Declaration), and submitted that the technical problem underlying the patent in suit was not to obtain stable paint compositions but the avoidance of too high a pH value, even locally, during the neutralization process. According to the Appellant, this problem had been already addressed in the British patent

(2) GB-A-1 224 390

disclosing that the aluminium salts of carboxymethyl-cellulose (CMC) dissolve at a pH of 8 or higher. The Appellant argued that for this reason it would have been obvious to the skilled person to avoid alkalinising the reaction mixture and to use $CaCO_3$ in the neutralization

step of Example 11 of document (1), because of the well known buffering properties of this salt at a pH of from 6 to 6.5.

V. The Respondent denied that the amended patent violated either Article 123(2) or 123(3) EPC.

He submitted that document (1) did not disclose the combination of an anionic thickener and an inorganic salt of a heavy or a trivalent metal in general and that, when applying the particular reaction conditions of Example XI of this document, large amounts of aluminium hydrate were formed and no stable paints would result; he referred, inter alia, to the Lunghini-Declaration in support of his argument.

VI. The Appellant requested that the decision under appeal be set aside and the European patent No. 0 182 962 be revoked.

The Respondent requested that the appeal be dismissed.

At the end of the oral proceedings, which took place on 7 March 1995, the Chairman announced the Board's decision to dismiss the appeal.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

The Board is satisfied that the amended claims meet the requirements of Article 123(2) and (3) EPC.

2.1 The only feature of amended Claim 1 objected to in respect of Article 123(2) was the indication in Claim 1 that "calcium carbonate is added immediately to the reaction product to neutralize excess cationic salts". It is therefore sufficient to deal only with this issue in detail.

2.1.1 In the Board's judgement the above mentioned feature follows directly and unambiguously from page 2, last paragraph of the description as originally filed which reads:

> "The method consists in bringing about the reaction between an anionic cellulose thickener ... and cationic salts ..., the excess of cationic salts being neutralized by calcium carbonate ..."

This paragraph deals in general with the method of formulating a heterochromatic paint according to the patent in suit and, therefore, this feature is clearly disclosed there as being mandatory for the generic process of Claim 1 and not only, as alleged by the Appellant, in the particular context of the specific process of Claim 9 as originally filed.

2.1.2 The Appellant's further objection that the all-importance of the neutralization with $CaCO_3$ for the stability of the products concerned had not been originally disclosed is not valid either. The effect of an increased stability of the suspended particles in the heterochromatic paints and related products obtained according to the process of the patent in suit in terms of an improvement over the prior art was also originally disclosed (see e.g. page 2, lines 15 to 25). There is no need under the EPC to explain the actual contribution of each and every feature of a process to the achieved effects in the application documents as originally

filed. If such (scientific) explanations are filed later on, they may or may not have a bearing on the issue of inventive step but can normally not give rise to an objection under Article 123(2) EPC, at least not as long as such an explanation is not incorporated into the application or patent in suit. The decision T 208/88, referred to by the Appellant in this connection does not help the Appellant since this decision deals with the assessment of novelty of the subject-matter of a use claim in which a new technical effect to be achieved is included as a functionally defined technical feature (new non-medical use for a known product - see in particular No. 3 of the Reasons for the Decision) and for this reason it is not applicable to the present case.

2.2 The Appellant further submitted, relying on the case history, that the patent had been granted for the manufacture of heterochromatic paints and related products comprising "solid" particles. He maintained that the amended Claim 1 was not limited to the formulation of such compositions, as the "non-soluble precipitated colour particles" read also on gel-like, hydrated, coloured particles as disclosed in prior art documents and, therefore, violated Article 123(3) EPC (see Grounds of Appeal, No. 2.2.1, pages 5 and 6).

2.2.1 The Board cannot accept this argument. According to Article 123(3) EPC "The claims of the European patent may not be amended during opposition proceedings in such a way as to extend the protection conferred". Thus the precondition for a violation of this provision is that the feature objected to was amended after the grant of the patent.

In the present case it is to be noted that the wording objected to by the Appellant, i.e. "non-soluble precipitated colour particles", was already contained in Claim 1 as granted, so that no extension of the protection conferred by the amended Claim 1 can result from this feature.

As far, as this objection could be construed as being in fact a novelty objection - see the Appellant's above mentioned allegation that Claim 1 as amended comprises the formulation of compositions containing coloured particles of the state of the art - attention is drawn to below No. 3.

2.2.2 The Appellant further argued that neutralising the reaction mixture of the base medium(s) and the reactive medium with $CaCO_3$ was only a feature of Claim 9 of the granted patent relating to a particular process involving a plurality of "reaction-neutralization steps" but not of granted Claim 1. The Board cannot accept the Appellant's conclusion that the addition of this feature, by way of amendment, to Claim 1 resulted in an extension contrary to Article 123(3), since the neutralization step was no longer confined to the particular process of Claim 9 but now became a feature of any process covered by Claim 1. In the Board's judgement, Claim 1 as granted read, in essence, on the preparation of heterochromatic paints and related products by reacting one or more base mediums with a reactive medium. Hence, in the circumstances of this case, any process having this feature and the other ones defined in Claim 1 as granted were within its range of protection, whether or not they involve additional features. Therefore, the incorporation of such an additional feature into Claim 1, i.e. the neutralization of the reaction product with $CaCO_3$, which was originally disclosed (see above No. 2.1.1), resulted not in a

broadening but in a restriction of the scope of protection of this claim because now those processes are excluded from the scope of protection where the reaction product is not neutralised with $CaCO_3$. It follows therefrom that the amendment complies with the requirements of Article 123(3).

3. *Novelty*

None of the cited documents discloses either a method for the formulation and preparation of heterochromatic paints and related products comprising all the features of Claim 1 of the patent in suit as amended or a heterochromatic paint comprising all the features of Claim 3 of the patent in suit as amended, which claims are therefore novel. As this was no longer disputed by the Appellant in the oral proceedings, it is not necessary to deal with this issue in detail.

4. *Sufficiency of disclosure*

The Opposition Division found that the invention as claimed in Claim 1 as amended was sufficiently disclosed in the application as filed. The Board has no reason to deviate from this finding which was no longer contested in the appeal stage.

5. *Problem and solution*

5.1 The patent in suit relates to a method for the formulation and preparation of heterochromatic paints and related products by, in essence, reacting

- one or more differently coloured base mediums containing an anionic cellulose thickener with

- a reactive medium comprising an inorganic salt of a heavy or trivalent metal, and
- adding immediately $CaCO_3$ to the reaction product,

and to the products resulting from this process.

5.2 Such methods and products were already known from document (1), which - and in particular its Example XI - is to be considered according to the opposition division's and the parties' judgement as the closest state of the art. The Board sees no reason to diverge from this viewpoint and takes this citation, which was already discussed in the patent in suit (page 2, lines 6 to 11), as the appropriate starting point for evaluating inventive step.

This document discloses in particular a method of preparing an aqueous multi-colour coating composition consisting essentially of a dispersion of discrete semi-fluid to gelatinous coloured globules of an aqueous film-former in an aqueous dispersion medium which method, in essence, comprises adding an aqueous hydrophilic colloid film-former containing a colorant under agitation to an aqueous medium containing an insolubilising agent in such a quantity as to render the hydrophilic colloid film-former substantially insoluble in the aqueous medium. For both groups, the hydrophilic film-formers or colloids and the insolubilising agent, a large number of compounds is listed respectively, comprising, inter alia, CMC and its sodium salt as an example for the hydrophilic colloid (see document (1), Claim 12, in combination with table 1 in column 8, and column 7, lines 30 to line 45).

Document (1) further disclosed that a multi-colour ceramic coating composition comprising a dispersion of coloured globules in water can be obtained by

- adding 8 parts by weight (pbw) of a 2% solution of $Al_2(SO_4)_3.18H_2O$ to
- a mixture of
  24 pbw of a pink colorant composition (composition A) and
  24 pbw of a 2% solution of high viscosity sodium CMC in water;
- further adding another 20 pbw of a 2% aqueous aluminium sulphate solution and dispersing the resulting gel in this solution;
- raising the pH of the outer phase to about 8 by the addition of about 0.5 pbw of a 10% aqueous ammonium hydroxide solution and allowing the dispersion to set for about 10minutes whereby the dispersed particles are enlarged through swelling; and
- adding 4.0 pbw of a 2% aluminium sulphate solution and 19.5 pbw of water for stabilising the dispersion, whereupon the pH of the outer phase is about 6

(Example XI, column 26, line 56 to column 27, line 28).

5.3 Having regard to the deficiencies of the state of the art acknowledged in the description and, thus, also to document (1), the patent in suit suggests as the underlying technical problem to provide improved polychromatic paints wherein, inter alia, the suspended particles possess greater long-term stability (page 2, lines 30 to 35).

The comparative tests of the Lunghini-Declaration demonstrate indeed an improved storage stability:

5.3.1 While the coloured particles of a paint composition according to the example described on page 6, line 1 to page 7, line 20 of the patent in suit remained practically unchanged after storing them for a period of

five months and, thus, the paint maintained its multi-coloured appearance, coloured particles prepared according to Example XI of document (1) had practically disappeared and the respective paint lost its heterochromaticity after a storage period of six months, as could be verified by an inspection of the respective exhibits 1C and 6C of the Lunghini-Declaration. Neither does the Board find that the difference of one month in the respective storage periods could have decisively influenced the tests, nor was this maintained by the Appellant.

5.3.2 The Appellant argued, relying on the Botteghi-Declaration, that in fact no stability problem existed with the coloured globules obtained according to Example XI of document (1). He offered in particular Example E of No 4.6 of the Botteghi-Declaration as supporting evidence for this contention. In this test, which is also designated as 'modified "Zola type" paint' (Zola being named as the inventor in document (1)), a blue paint was made by reacting a blue base solution with aqueous aluminium sulphate and adding only as much aqueous ammonia solution to the reaction mixture as was required to achieve a pH of up to 6.5. Thereafter 16.6 parts of a 2% aqueous aluminium sulphate solution (and 80 parts of a styrene-acrylic copolymer suspension) were added, resulting in a final pH of 6.1. 33 parts of this blue paint were mixed with 67 parts of a red paint (produced according to the same procedure) yielding the desired multicolored material which proved to be stable after five months of storage (see the Botteghi-Declaration, in particular page 12, in combination with page 7, lines 1 to 10).

It is noted, that this method differs essentially from that of Example XI of document (1) in so far as it avoids an ammonium hydroxide addition until a pH of

about 8 is achieved, which is confirmed by its designation as a "modification". The Appellant commented that it would have been quite normal for a skilled person not to make alkaline the reaction mixture, which he would have considered as an unnecessary, time-wasting step taking into account that the final paint should be about neutral in any case. The Board cannot accept this argument. The raising of the pH to a value of about 8 is not an arbitrary or accidental or superfluous feature of the method of the said Example XI, but has the well defined purpose of enlarging the coloured particles by swelling at the indicated pH value (see above No. 5.2). In these circumstances, in the Board's judgement, a skilled person would not have simply ignored or deleted this step. For this reason, Example E of the Botteghi-Declaration is neither a proper repetition of Example XI of document (1), nor a valid supporting evidence for the Appellant's allegation that no stability problems would arise from the multicolored compositions of document (1).

5.3.3 Thus, the Board is satisfied in view of the Lunghini-Declaration that the above defined technical problem existed and has been credibly solved by the method now claimed.

6. *Inventive Step*

6.1 The method of Claim 1 of the patent in suit differs from that known from Example XI of document (1), primarily, by the different treatment of the reaction product obtained from the base medium and the reactive medium.

No indication can be found in this citation that the replacement of both the alkalinization with ammonia to a pH of about 8, and the subsequent stabilization of the coloured particles with additional aluminium sulphate,

whereby a weakly acidic pH of about 6 is achieved, by the addition of $CaCO_3$ would yield heterochromatic paints and related products comprising coloured particles with an improved storage stability.

The Appellant submitted that the possibility of such an replacement was obvious for the notional skilled person from the two sentences of document (1) which read:

> "Since pH is often important in insolubilization, this can of course be adjusted by minor additions of acids or alkalies, but is often more readily controlled by use of acidic or basic salts. It is believed that the selection of insolubilizing salts will be wholly evident to those versed in the art of hydrophilic colloids."

(see column 8, line 73 to column 9, line 4). According to the Appellant this was a pointer to use the basic salt $CaCO_3$ instead of aqueous ammonia as a neutralization agent.

6.2 The Board cannot accept this argument.

6.2.1 First of all, the quoted passage refers only to a pH **adjustment** for the insolubilization; it is not deducible from this passage that this has necessarily to be always a **neutralization**. Rather to the contrary, taking into account also Example XI of document (1), the skilled person could also conclude that this meant, in relation of the insolubilization of sodium CMC with aluminium sulphate, adjusting the pH to a value of about 8, at least for a transient period of time.

6.2.2 Furthermore, in the claimed invention $CaCO_3$ is not limited to the role of a pH regulator. This is confirmed by the Botteghi-Declaration, which states

> "... within a reasonable range, the pH-value does affect the stability of the paint materials. This outcome suggests that the role played by $CaCO_3$ as well as by other bases or salts, is not only that of a neutralization agent but is more complex and depends on several different mechanisms; ..."

(page 7, last but one paragraph). The stabilising function of this salt, when added to the reaction product of base medium and reactive medium (see above No. 5.3.1), renders superfluous the final addition of further aluminium sulphate, as required explicitly in Example XI of document (1) for stabilising the precipitated particles. No information at all could be gained by the skilled person in this respect from citation (1).

6.3 Document (2) discloses that dry aluminium CMC can be completely dissolved by stirring for some time in alkaline water of a pH of at least 8 and that the rate of such dissolution can be improved by, essentially, grinding freshly prepared aluminium CMC in the wet state prior to drying it (page 1, lines 21 to 30, in connection with lines 66 to 69, and lines 47 to 57). The Appellant inferred therefrom that a skilled person would have expected that the reaction product of the coloured base medium and the aluminium sulphate of the reactive medium would dissolve in an alkaline medium and, thus, would have avoided a pH of 8 as disclosed in Example XI of document (1).

The Board cannot accept this argument either. As indicated, citation (2) is concerned with the increase of the dissolution rate of dried aluminium CMC. It contains no information on dissolution rates of freshly precipitated aluminium CMC in the presence of other ingredients. In particular, there is no information in

document (2) that a pH value of about 8, when maintained for about 10 minutes, would be detrimental for obtaining storage stable coloured particles when following the procedure of Example XI of document (1). Thus, in the Board's judgement, the skilled person could find no hint in document (2) which would have induced him to avoid this reaction step of document (1). Even if there were a basis for assuming that a skilled person would have had some reservation against increasing the pH of the reaction mixture up to a value of 8, he would have found no pointer in document (2) that the two process features known from document (1), namely adding aqueous ammonia and, thereafter, incorporating additional aluminium sulphate, could be replaced by a single addition of $CaCO_3$, which would then result in an improved storage stability of the coloured particles obtained.

6.4 For these reasons, the Board concludes that there exists no technical teaching in documents (1) and (2), either taken alone or in combination, which would have induced the skilled person to carry out the process in a way any now claimed for solving the existing technical problem.

6.5 The Board cannot accept the Appellant's argument either that the Botteghi-Declaration shows that $CaCO_3$ was nothing particular, as also other bases or salts would yield the same or similar results and that, therefore the use of $CaCO_3$ in a process, which was otherwise known from document (1), was not inventive. As explained above, there was nothing in the state of the art which could have induced the skilled person at the filing date of the patent in suit to add $CaCO_3$ instead of aqueous ammonia and aluminium sulphate to the reaction product obtained from the coloured base medium and the reactive medium. This finding cannot be changed by subsequently discovering, i.e. almost seven years after the claimed invention had bee published, that also other salts or

bases can be used instead of $CaCO_3$, which discovery required as a precondition the knowledge of the patent in suit and, thus, results from a typical ex post facto analysis, which is not permissible.

Finally, the statements in the Cervellati-Declaration "... that in the period within June and September 1991 MACRI CHEMICALS manufactured under my supervision several batches of aqueous multicolour paint, using as sole neutralizing agent during production sodium hydroxide" and "I also declare that some containers of those paints are still available at MACRI CHEMICALS and that the product therein contained was not negatively affected as concerns discrete globules stability, ..." are of no evidential value at all, as this declaration, on which the Appellant did not give any explanatory comment, is completely silent on the paint constituents, in particular on the nature of the coloured base medium and of the reactive medium.

6.6 In the Board's judgement the method of Claim 1 must thus be regarded as non-obvious. Accordingly, the subject-matter of Claim 1 involves an inventive step in the sense of Article 56 EPC.

Claim 3 relates to a heterochromatic paint based on the same inventive concept and, therefore, derives its patentability from that of Claim 1 as do the dependent Claims 2, and 4 to 12, relating to particular embodiments of Claims 1 and 3, respectively.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier A. Nuss