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Datasheet for the decision of 14 March 2012

Case Number: T 0085/10 - 3.3.01

Application Number: 00984070.3

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Language of the proceedings: EN

Title of invention:
Individual inks and an ink set for use in the color ink jet printing of glazed ceramic tiles and surfaces

Patentee:
FERRO CORPORATION

Opponent:
METCO S.R.L.

Headword:
Set of water immiscible soluble ink jet inks/FERRO

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - (yes) - solution not inferred from the prior art"

Decisions cited:
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Catchword:

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Case Number: T 0085/10 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 14 March 2012

Appellant: (Opponent)	METCO S.R.L. Via Galileo Galilei, 4 IT-40050 Monteveglio Bo (IT)
Representative:	Palladino, Saverino Notarbartolo & Gervasi S.p.A. Corso di Porta Vittoria 9 IT-20122 Milano (IT)
Respondent: (Patent Proprietor)	FERRO CORPORATION 1000 Lakeside Avenue Cleveland OH 44114 (US)
Representative:	Reinhardt, Markus and Schultheiss, Jürgen Patentanwaltskanzlei Reinhardt Postfach 11 09 D-83219 Grassau (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted 20 November 2009 concerning maintenance of European patent No. 1272574 in amended form.**

Composition of the Board:

Chairman: C. M. Radke
Members: J.-B. Ousset
C.-P. Brandt

Summary of Facts and Submissions

I. The opponent lodged an appeal against the interlocutory decision of the opposition division, that European patent no. 1 272 574 as amended on the basis of claims 1 to 44 of the main request filed on 6 July 2006, met the requirements of the EPC. Claim 1 reads as follows:

"1. An ink set for use in decorating the glazed surface of an article using an ink jet printer, the ink set comprising at least three separate inks containing soluble transition metal complexes that upon heating to a temperature from about 500°C to about 1300°C decompose to form colored oxides and/or colored combinations with one or more materials of the glaze, a first ink of the ink set comprising a soluble cobalt complex for use in forming a cyan color, a second ink of the ink set comprising a soluble gold complex for use in forming a magenta color, and a third ink of the ink set comprising a soluble transition metal complex for use in forming a yellow color."

II. The following cited documents were considered as relevant by the opposition division:

(1) US-A-5 273 575
(4) EP-A-0 940 379
(10) W. Roberts, L'Industrie Céramique, No. 827, 5/88, pages 307 to 311

III. The opposition division held that the subject-matter of the claims of the main request was inventive in view of

document (1) as closest prior art if taken alone or in combination with documents (10) and/or (4).

IV. During oral proceedings before the board, the respondent filed a new main request and an amended version of the description. Claim 1 of this request reads as follows:

1. An ink set for use in decorating the glazed surface of an article using an ink jet printer, the ink set comprising at least three separate water immiscible inks containing soluble transition metal complexes that upon heating to a temperature from about 500°C to about 1300°C decompose to form colored oxides and/or colored combinations with one or more materials of the glaze, a first ink of the ink set comprising a soluble cobalt complex for use in forming a cyan color, a second ink of the ink set comprising a soluble gold complex for use in forming a magenta color and a third ink of the ink set comprising a soluble transition metal complex for use in forming a yellow color."

V. The appellant's arguments can be summarized as follows:

- The subject-matter claimed was too broad and could not be regarded as inventive, because the first ink set as defined in claim 1 did not necessarily produce a cyan color.

- The problem to be solved could only be seen in the provision of an alternative set of three known inks.

- The water miscible solvents mentioned in document (1) were only disclosed as preferred solvents and other solvents could be used.

- The limitation to water immiscible solvents present in the inks was immaterial for the color production, since the latter depends on the nature of the metal.

- It was obvious for the person skilled in the art to modify the ink set of document (10) with the inks disclosed in document (1) or (4) and so to arrive at the claimed invention.

VI. The respondent's arguments can be summarized as follows:

- Document (1) does not disclose inks based on a soluble cobalt complex and a soluble gold complex.

- Document (4) does not relate to the treatment of glazed surfaces.

- The appellant's argument was based on an ex-post facto analysis, since the cited documents do not relate to the prevention of clogging of the nozzles.

- The present claims require the inks to be water immiscible. This feature is not disclosed in the cited documents and prevents the migration of the ink into the ceramic treated therewith.

VII. The appellant requested that the decision under appeal be set aside and that the European patent No. 1272574 be revoked.

VIII. The respondent requested that the patent be maintained on the basis of the sole request (claims 1-44) as filed during the oral proceedings on 14 March 2012.

IX. At the end of the oral proceedings, the decision of the board was announced.

Reasons for the Decision

1. The appeal is admissible.

2. Novelty of the claimed subject-matter was not disputed.

3. Inventive step

3.1 Prior art

The board agreed with the parties that document (10) represents the closest prior art. It discloses an ink set of three inks. The yellow ink may contain a zirconium praseodymium pigment, the magenta ink may contain a gold pigment and the cyan ink may contain a cobalt pigment (see pages 308-309). The inks may be applied to ceramics by means of an ink jet printer (see the chapter "Impression par jet d'encre"). The content of document (10) differs from the claimed subject-matter in that the inks of document (10) are pigmented so that the inks are not soluble, contrary to the requirements of present claim 1.

3.2 Problem

The present claims require the inks to be water immiscible and the transition metal complexes to be soluble.
The solubility of the transition metal complexes apparently serves to prevent the clogging of the nozzles of the ink jet printer.
The respondent argued that the immiscibility of the inks in water serves to prevent the migration of the ink droplets on the surface of the ceramic treated therewith (see page 7, lines 8-11 of the patent in suit). This appears to be plausible and was not denied by the opponent.
Hence, the problem to be solved may be defined as the provision of an ink set for the decoration of glazed surfaces by means of an ink jet printer, where the inks do not clog the nozzles of the printer and do not migrate on the glazed surfaces.
For the reasons given above, the board is convinced that this problem was solved by the claimed subject-matter.

3.3 Solution

Document (10) gives no indication that the pigments used in the inks might by replaced by soluble colouring agents, nor does it hint at water immiscible inks.
Hence, this document alone cannot render the claimed subject-matter obvious.
Document (1) refers to document (10) and claims to improve the inks disclosed in the former by using inks consisting of a metallic salt dissolved in a solvent

(see (1), column 1, line 59 to column 2, line 8). Document (1) teaches that the selected solvent must dissolve the salts to enable the ionic dissociation but the solvents mentioned in this document are either water or solvents which are water miscible (see column 4, lines 19-20 and column 2, lines 34-36). Hence, the person skilled in the art would not find in document (1) a hint to arrive at the claimed matter. Document (4) also deals with the coloration of ceramics and teaches that solutions containing gold can be used for this purpose. However, this document only deals with inks which are aqueous solutions or solutions in water/hydrosoluble organic solvent mixtures (see claim 1). Therefore, the person skilled in the art would also not find in this document the necessary information allowing him to arrive at the claimed subject-matter without inventive skills.

3.3.1 That the nature of the solvent is immaterial for the production of the colour is not disputed. However, all the cited prior art documents deal with ink sets in which the different metallic complexes are either in suspension as pigments or in aqueous solution. The person skilled in the art would therefore not have inferred from these disclosures that an ink set for an ink jet printing device containing water immiscible inks could be used to decorate ceramics. The said ink set is thus the result of an inventive approach.

3.4 In view thereof, the claimed subject-matter is inventive (Article 56 EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent as amended in the following version:
Description: pages 3-14 as filed during the oral proceedings on 14 March 2012.
Claims: 1-44 as filed during the oral proceedings on 14 March 2012.

The Registrar: The Chairman:

M. Schalow C. M. Radke