

Veröffentlichung im Amtsblatt	Ja/Nein
Publication in the Official Journal	Yes/No
Publication au Journal Officiel	Oui/Non

Aktenzeichen / Case Number / N° du recours : T 186/89 - 3.3.1

Anmeldenummer / Filing No / N° de la demande : 82 108 231.0

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 074 117

Bezeichnung der Erfindung: Process for producing azo pigments

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : C09B 29/15

ENTSCHEIDUNG / DECISION

vom / of / du 1 August 1990

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /

Titulaire du brevet :

Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo

Einsprechender / Opponent / Opposant :

Hoechst Aktiengesellschaft

Stichwort / Headword / Référence : Azo pigment modifiers/UENO

EPÜ / EPC / CBE Art. 52, 56

Schlagwort / Keyword / Mot clé : "Inventive step - yes"

Leitsatz / Headnote / Sommaire



Case Number : T 186/89 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 1 August 1990

Appellant : Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo
(Proprietor of the patent) 2-31, Koraibashi
Higashi-ku Osaka (JP)

Representative : Diehl Glaeser Hiltl & Partner
Patentanwälte
Flüggenstrasse 13
D-8000 München 19

Respondent : Hoechst Aktiengesellschaft, Frankfurt
(Opponent) Zentrale Patentabteilung
Postfach 80 03 20
D-6230 Frankfurt am Main 80

Representative :

Decision under appeal : Decision of Opposition Division of the European Patent
Office dated 1 December 1988, posted on 17 January 1989,
revoking European patent No. 0 074 117 pursuant to
Article 102(1) EPC.

Composition of the Board :

Chairman : K. Jahn
Members : P. Krasa
W. Moser

Summary of Facts and Submissions

- I. This admissible appeal lies from the Opposition Division's decision revoking European patent 74 117 concerning a process for producing azo pigments. The decision was rendered on the basis of the only claim which was filed by the patentee in the course of the opposition proceedings and which reads as follows:

"A process for producing an azo pigment, which comprises reacting a mixture composed of 90 to 99.9% by weight of (1) 2-hydroxynaphthalene-3-carboxylic acid or its salt, 0.1 to 9.9% by weight of (2) β -naphthol or its salt and 9.9 to 0.1% by weight of (3) a phenolic by-product having a molecular weight of about 300 and containing about 1 equivalent of phenolic hydroxyl groups obtained by evaporating β -naphthol from a tarry substance formed as a by-product during the reaction of an alkali β -naphtholate with carbon dioxide, extracting the residue with an alkali, and precipitating the soluble matter with an acid, with a diazonium compound of aminosulfonic acid derived from aniline or naphthylamine, and optionally converting the azo pigment to its lake."

- II. In the Reasons for the Decision the novelty of the process claimed was acknowledged. The arguments regarding lack of inventive step can be summarised as follows:

The object of the invention was to increase and/or influence the transparency of certain azo pigments already known per se. However, the process suggested according to the claim as the solution of the technical problem mentioned was obvious for a skilled person as, according to BIOS Final Report No. 986, Report 139 (1949) (3), the tarry by-product of the Kolbe-Schmitt reaction was already known, the 2-hydroxynaphthalene-3-carboxylic acid (BON), separated from such tarry substance was 96% to

97% pure and comprised 1.0% to 1.2% β -naphthol and by-products summing up to 100%; and as it was also known already from US-A-4 224 221 (7) that impurities in the starting materials give rise to variations in the colour and the physical properties of the azo pigments whereby the transparency of the pigments can be controlled. To suggest specific proportions of the impurities for optimising the respective effects was only a matter of routine for the skilled person and not inventive. In addition, the azo pigments obtained according to the claimed process were lacking unexpected effects when compared with known products.

III. The Appellant (Proprietor of the patent) submitted orally and in writing basically that the invention substantially consists of the following three elements:

- (a) the finding of the phenolic compounds in the tarry by-products of the Kolbe-Schmitt reaction;
- (b) the finding that these phenolic compounds have the effect of improving the characteristics of the final pigments;
- (c) the technique to extract these phenolic compounds from the tarry by-products with an alkali and to use an acid precipitate thereof as a modifier for the final pigments.

None of these three elements was either known or obvious prior to the priority date of the patent in suit.

IV. The Respondent (Opponent) was of the opinion that the term "phenolic by-products" comprises e.g. also naphthalene carboxylic acids which contain a phenolic OH-group. Such compounds were already used as modifiers for the azo pigments according to (7) and could be found in BON commercially available from Hoechst AG.

The azo pigments obtainable according to the patent in suit have a transparency which is similar or even worse than the transparency of known azo pigments. It was not inventive to suggest a further process for the manufacture of these azo pigments especially as this other process was already foreshadowed in the state of the art. In this respect the Respondent referred to citation (7) in connection with the common general knowledge that phenolic by-products, i.e. the component (3) of the claim, must be a constituent of the tarry by-product of the Kolbe-Schmitt reaction. According to the Respondent the Appellant only made use of the commonly known technique of mixed coupling.

- V. Oral proceedings, in which the parties relied only on citations (3) and (7), took place on 1 August 1990.

The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the documents submitted during oral proceedings (the claim reading as shown hereinabove). The Respondent requested that the appeal be dismissed.

The decision was announced at the conclusion of the oral proceedings.

Reasons for the Decision

1. The claim on file differs from Claim 1 as granted by incorporation of Claim 2 as granted and the passage concerned with the preparation of component (3) ("obtained by evaporating...with an acid"). This latter feature obviously limits the scope of the claim on file when compared with Claim 1 as granted and is properly supported by the documents as originally filed and granted (see

page 2, lines 5 to 10 and page 2, lines 25 to 27 respectively). Thus no objection arises under Article 123 EPC.

2. The invention as claimed is concerned with a process for the manufacture of azo pigments whereby in addition to the main coupling components, i.e. BON, and a diazonium compound as defined, additives are present in the diazotization mixture. These additives act as modifiers having an influence on the physical properties of the azo pigments. It is said that especially darkness and transparency can be increased (see page 2, lines 11 to 14 of the patent in suit).

The Board considers document (7) as the closest state of the art. This document is concerned with the use of modifiers for azo pigments based on BON which are all derivatives of BON and have all to be prepared in separate processes from the said parent compound. Examples are given for the oxidation, chlorination or bromination (see Examples 1 to 5).

It is also stated in document (7), column 1, lines 37 to 42: "Modifiers have been used in pigment manufacture before. Various impurities in the starting materials are known to participate in the chemical reaction and produce variations in the colour properties and physical properties of the finished pigments. One known example of a modifier in the case of lithols is alpha-naphthol,...". This passage in the Board's judgment does not support the conclusion drawn by the Opposition Division that the impurities which were said to be e.g. naphthoic acids were in fact already used as modifiers to control the characteristics of the ultimate pigments. Variations in the properties are not necessarily improvements. It rather seems that such variations caused by the impurities gave rise to the need of modifiers, one of which was alpha-

naphthol, and which were to be improved according to document (7). This interpretation of citation (7) as quoted is supported by US-A-4 020 102 (9) where it is stated that BON to be used as a coupling component in the manufacture of azo dyes should be very pure "because impurities in the dyes seriously interfere with the tinctorial behaviour", (cf. (9), column 1, lines 25 to 27).

3. In view of document (7) the technical problem underlying the patent in suit is to provide another economical process for the manufacture of azo pigments in the presence of modifiers.

This problem is plausibly solved by the claim on file. It is clear from examples 1 and 2 of the patent in suit that the physical properties, especially also the transparency, of the azo pigments concerned can be controlled by the addition of varying amounts of the components (2) and (3) as defined in the claim.

4. None of the documents available to the Board discloses a process as claimed. Thus the subject-matter of the claim is novel. As the novelty is not under dispute, no further comments are required.
5. As already indicated hereinabove, document (7) does not disclose that impurities present in the coupling component of the starting compounds for the diazotization step can be used as modifiers for controlling the physical properties of the final azo pigments. Neither can such a disclosure be taken from (3):

Document (3) discloses in a rather detailed manner the preparation of BON and especially the statement that a tarry by-product comprising xanthone, resin and unreacted β -naphthol is formed in the course of the reaction and has

to be removed (document (3) pages 238 and 239). It is also clear from document (3) that the product comprises up to 4% impurities, β -naphthol being specified as one of these impurities (compare document (3), page 244).

However, there is no pointer in document (3) either regarding the structure of the by-products designated as "resins" or that the presence of such impurities is desirable and that they act as modifiers for the final pigments.

6. Thus the overall picture which can be drawn from citations (3), (7) and (9) is as follows:

It has been known at least since 1949 (document (3)) that BON manufactured according to the Kolbe-Schmitt-Synthesis contains impurities one of which is β -naphthol. It was also known at least since 1977 (document (9)) that such impurities interfere with the physical properties of the azo pigments. It was known at least since 1971 (see K. Venkataraman, The Chemistry of Synthetic Dyes, Vol. V (1971), pages 361-365 (2)) that modifiers can be used for improving the properties of the azo pigments aimed at. One possibility was the addition of salts of wood rosin e.g. by co-precipitation of the respective metallic salts of rosin and the azo toner. A process which is also called "resination". Another possibility was obviously to use α -naphthol as a modifier (see document (7), column 1, lines 41, 42).

In 1980 (see document (7)) new modifiers were disclosed which were to be manufactured in separate processes and were to be added to the diazotization step. This fact shows that there was a need for additional modifiers. None of these documents (3), (7) or (9) gives the faintest hint that a particular group of components of the tarry by-product of the BON manufacture could also be used as a

modifier which in combination with β -naphthol allows the control of the physical properties of the azo pigments when added to the coupling step. This was confirmed by the Respondent in the course of the oral proceedings.

7. The existence of the tarry by-products of the BON manufacture was already known at least for more than 30 years and only about 1 year before the priority date of the patent in suit it was suggested that quite different compounds to those of the present claim should be used as modifiers. In view of this fact the Board holds that the process defined in the claim on file cannot have been obvious for the skilled person. Thus the subject-matter of this claim involves an inventive step.

This finding cannot be changed by the Respondent's argument that it was possible for a skilled person to analyse the tarry substance, to establish its chemical relationship with the impurities of commercial BON and, thus, to arrive immediately at the claimed invention. It is not the question whether a skilled person could have done this, but whether he would have done so in the expectation of solving the technical problem as defined; see decision T 2/83, Reasons for the Decision No. 7; OJ EPO 1984, 265, 270. As shown above, there was no incentive for the skilled person searching for a new modifier for azo pigments to turn to the tarry by-products of the Kolbe-Schmitt reaction which were considered troublesome hitherto. Moreover the chemical structure of the tarry substance other than β -naphthol and xanthone was unknown.

Neither is the Respondent's further argument valid that the pigments obtainable according to the claimed process show no improvements when compared with pigments prepared via conventional methods and, thus, the alternative process suggested in the claim lacks inventiveness. As shown above the process per se was not obvious for a

skilled person and, thus, the lack of superior properties of the products resulting therefrom may not be construed as prejudicial to the patentability of the process according to the patent in suit.

The Respondent also contended that there was a discrepancy between the disclosure of the application as filed and that of the priority application in respect to the properties of the azo pigments. This, however, was contested by the Appellant.

In this respect, the Respondent overlooks that a process for the manufacture of azo pigments is claimed in the patent in suit. It is sufficient for such a process to disclose all necessary process parameters; there is no need to disclose beneficial effects due to the process as these effects result automatically therefrom. The sufficiency of the process parameters disclosure was never in dispute, however. Thus, this argument cannot support the Respondent's case either.

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 on the basis of the documents submitted during oral proceedings.

The Registrar:



M. Beer

The Chairman:



K. Jahn