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**Datasheet for the decision
of 13 July 2011**

Case Number: T 1177/09 - 3.3.01

Application Number: 04766211.9

Publication Number: 1648967

IPC: C09B 44/16

Language of the proceedings: EN

Title of invention:
Cationic direct dyes

Applicant:
Ciba Holding Inc.

Opponent:
-

Headword:
Cationic direct dyes/BASF Schweiz AG

Relevant legal provisions:
EPC Art. 56, 54

Relevant legal provisions (EPC 1973):
-

Keyword:
"Novelty - (yes)"
"Inventive step - (yes) - non-obvious solution"

Decisions cited:
-

Catchword:
-



Case Number: T 1177/09 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 13 July 2011

Appellant: BASF Schweiz AG
Klybeckstrasse 141
CH-4057 Basel (CH)

Representative: Pfreunds Schuh, H

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 5 December 2008
refusing European patent application
No. 04766211.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: P. Ranguis
Members: J.-B. Ousset
L. Bühler

Summary of Facts and Submissions

- I. An appeal was lodged against the decision of the examining division to refuse the European patent application No. 04 766 211.9.
- II. In the present decision the following numbers will be used to refer to documents:
- (1) EP-A-1 219 683
 - (2) EP-A-1 166 752
 - (3) US-A-4 294 756
 - (4) DE-A-11 37 816
 - (5) DE-A-10 98 642

The examining division found that the then claimed subject-matter was not inventive. Claim 1 had the same wording as claim 1 before the board, the only difference being that R_2 was an unsubstituted or substituted C_1-C_{12} alkyl, whereas in claim 1 before the board the substituents of R_2 were defined (see point III below).

In its decision the examining division held that in view of document (1), the technical problem could be seen in the provision of a further method for dyeing human hair. The solution was characterised by an amino-substitution at the o-position of the phenyl ring, in contrast to the monomeric or dimeric cationic dyes disclosed in document (1) characterised by an amino-substitution of the phenyl ring at its p-position. Since:

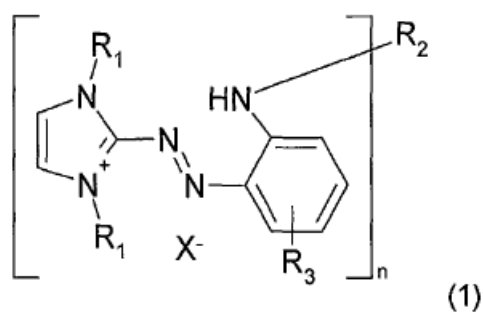
- an amino-substitution of the phenyl ring at its o-position is disclosed in the cationic 2-phenylazo-N,N'-dialkyl-imidazoles of documents (3) to (5),
- The 2-imidazolyl-azo-phenyl group is responsible for the properties of the claimed compounds as dyes, and
- the introduction of an amino group in an azo-substituted phenyl ring at the o- or the p-position is chemically equivalent,

so the claimed subject-matter is merely an alternative to documents (1) and (2).

It also found that the then claimed subject-matter was neither concise nor supported by the description in view of the definition of R₂.

III. Claim 1, the sole independent claim of the main request, reads as follows:

"1. A method of dyeing human hair, that comprises bringing into contact with the hair at least one single cationic dye selected from formula (1)



wherein

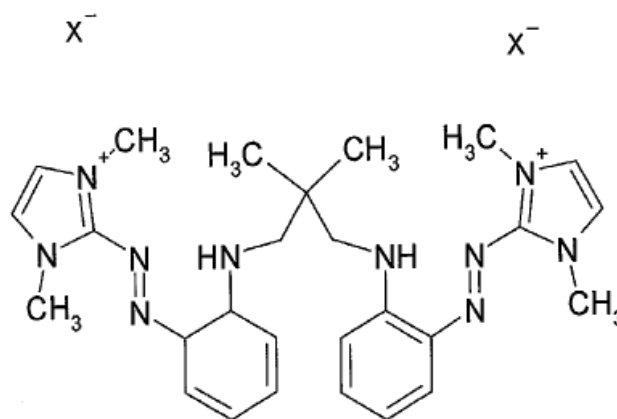
R₁ is methyl

X⁻ is an anion

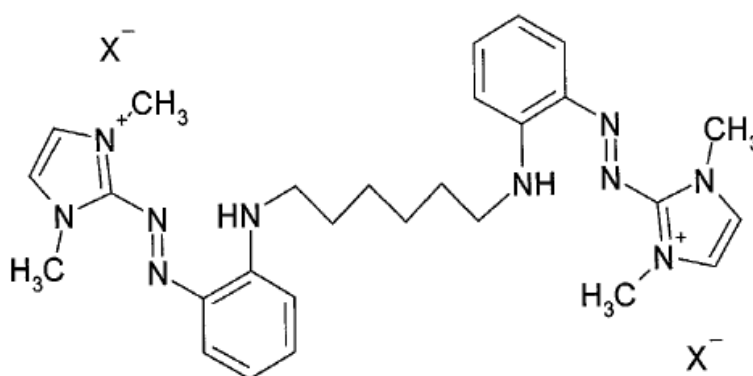
R₃ is hydrogen

n is 1; and

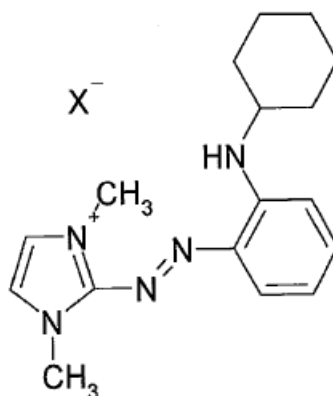
R₂ is C₁-C₁₂ alkyl, which is optionally substituted by hydroxyl; C₁-C₆ alkyl, C₁-C₆ alkoxy, cyanide, halide or NR₅R₆, wherein R₅ and R₆ are each independently of the other hydrogen, aryl or C₁-C₆ alkyl;



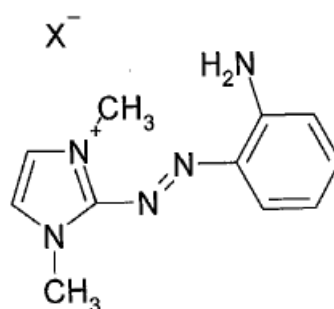
formula (7)



formula (8)



formula (16) and



formula (17)"

Claim 1 of the first auxiliary request is identical to claim 1 of the main request.

IV. The appellant argued as follows:

- The compound in column 8, lines 45 to 50 of document (3) was a by-product. Document (3) related to compounds having a different structure. The person skilled in the art would not have considered the teaching of document (3).
- The technical problem being seen as an alternative method for dyeing hair, the person skilled in the art would not have combined the teachings of documents (1) or (2) with the other prior art

cited, since the latter did not disclose hair dyeing compositions.

- V. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or alternatively on the basis of the first auxiliary request, both filed during oral proceedings which took place on 13 July 2011.
- VI. At the end of the oral proceedings the decision of the board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Amendments
- 2.1 Claim 1 is based on claim 15 as originally filed in combination with the description as originally filed (see page 1, formula (1), pages 6, 8 and 9, formulae (7), (8), (16), (17), page 2, third full paragraph and the paragraph bridging pages 2 and 3).
- 2.2 The present set of claims fulfils the requirements of Articles 123(2) and 84 EPC.
3. Novelty
- 3.1 Document (3) describes a compound according to formula (1) of claim 1 with R₂ is methyl (see column 8,

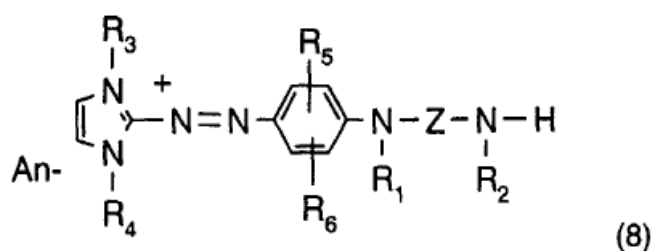
lines 41-54). However, this document does not relate to the dyeing of human hair but to industrial materials such as polyacrylonitrile (see column 4, lines 52 to 68). The claimed matter is thus novel vis-à-vis document (3).

- 3.2 Document (1) discloses cationic dyes having an amino group attached at the position **para** of the phenyl ring vis-à-vis the diazo group whereas the method of the present invention uses cationic dyes having an amino group on the phenyl group in **ortho** position vis-à-vis the diazo group. Novelty vis-à-vis document (1) is also acknowledged.

Therefore, the method of claims 1 and 2 for dyeing human hair is novel (Article 54 EPC).

4. Inventive step

- 4.1 Document (1) describes that cationic dyes of formula (8)



are appropriate to dye human hair (see page 4, line 58 and page 5, lines 1-2). As mentioned in point 3.2 above, its content differs from that of the current application with regard to the chemical structure of the dyes used to perform the claimed method.

4.2 According to the present application the dyes exhibit good fastness properties with respect to washing and light, and are sufficiently stable under reducing or oxidizing conditions. The appellant did not submit any relevant evidence to show that the dyes defined in claim 1 exhibited improved properties in that respect. Since those properties can be considered as a common objective pursued in this art, the technical problem to be solved vis-à-vis document (1) can be seen in the provision of a further method using cationic azo dyes for dyeing human hair. The solution is represented by claim 1.

In view of the examples B1 to B3, B5 to B8 and the general description, it may be considered that the problem has been credibly solved with respect to the claimed area.

4.3 It remains to be decided whether or not the claimed solution is obvious in view of the prior art cited.

4.3.1 From the teaching of document (1), it can be inferred that only compounds of formula (8) (see point 4.1 above) are appropriate to dye human hair. The person skilled in the art would not find any information in this document to suggest the use of other cationic azo dyes.

4.3.2 Document (2) also discloses cationic azo dyes for hair characterised by an amino-substitution of the phenyl ring at its p-position.

4.3.3 Document (3) discloses a cationic azo dye having an amino group in position ortho (see point 3.1 above). The dyeing of human hair - by using the said cationic

dye - is neither mentioned nor envisaged in document (3). This document does not address the technical problem to be solved and would only have been considered with hindsight.

4.3.4 Document (4) discloses cationic azo dyes used to dye various industrial materials such as natural or artificial fibres and leather (see column 3, lines 56 to 66). By reaction of the quaternary dyestuff with an amine such as monomethylamine, a methylamine moiety in o- as well in p-position of the phenyl ring can be obtained.

Document (5) discloses cationic azo dyes which are used to dye various textile fibres (see bridging paragraph of columns 2 and 3). Although those dyes may be substituted in the o-position of the phenyl ring, the sole substituents envisaged are those disclosed in the examples, i.e. methoxy, ethoxy or (N-methyl, N-phenyl)-amino all outside the definition of cationic dyes of claim 1. Like document (3), those documents do not address the technical problem of providing further dyes to be used in hair dyeing and for these reasons would only have been considered with hindsight.

4.3.5 Therefore, contrary to the finding of the examining division, the person skilled in the art would not have combined the teachings of documents (1) and (2) on one hand and the teachings of documents (3) to (5) on the other hand because the latter do not address the technical problem to be solved, so it would not have been obvious to use the compounds defined in claim 1 as a solution to the technical problem set out above. In particular, the board does not agree with the finding of the examining division that the introduction of an

amino group in an azo-substituted phenyl ring at the o- or the p-position is chemically equivalent. It is agreed that from a chemical point of view the introduction of an amine on a phenyl ring substituted with a diazonium may well be achieved in the o- or p-position. Nevertheless this fact is not relevant to solve the technical problem.

4.3.6 Consequently, the person skilled in the art would not have arrived at the claimed process without inventive step. The same conclusion applies to claim 2 of the main request, since it is dependent on claim 1.

4.4 The subject-matter of the main request is based on an inventive step (Article 56 EPC).

4.5 Since the main request fulfils the requirements of the EPC, the board sees no reason to decide on auxiliary request 1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent with the following claims and a description to be adapted thereto:
Claims:
No. 1 and 2 filed as main request during oral proceedings of 13 July 2011.

The Registrar

The Chairman

M. Schalow

P. Ranguis