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File Number: T 162/89 - 3.3.1

Application No.: 83 305 092.5

Publication No.: 0 102 839

Title of invention: Silver halide color photographic light-sensitive material

Classification: G03C 7/34

D E C I S I O N  
of 15 February 1991

Proprietor of the patent: Konica Corporation

Opponent: Agfa-Gevaert AG, Leverkusen

Headword: Colour Photographic Material/KONICA

EPC Art. 56

Keyword: "Inventive step (main and first auxiliary request - no; second auxiliary request - yes) - disregarding a technical problem not solved by all embodiments comprised by Claim 1"

Headnote



Case Number : T 162/89 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 15 February 1991

**Appellant :**  
(Opponent)

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**Respondent :**  
(Proprietor of the patent)

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**Decision under appeal :**

Decision of Opposition Division of the European  
Patent Office dated 20 January 1989 rejecting the  
opposition filed against European patent  
No. 0 102 839 pursuant to Article 102(2) EPC.

**Composition of the Board :**

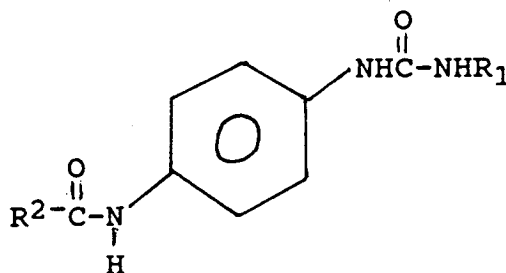
**Chairman :** K.J.A. Jahn  
**Members :** R.K. Spangenberg  
J.A. Stephens-Ofner

## Summary of Facts and Submissions

- I. This appeal lies from the decision of the Opposition Division of the EPO dated 20 January 1989 rejecting an opposition against the subject-matter of Claims 1 to 4, 8 to 10 and 12 to 15 of European patent No. 102 839, granted in response to European patent application No. 83 305 092.5 filed 2 September 1983. The decision under appeal was based upon the patent as granted, comprising 15 claims, the only independent Claim 1 reading as follows:

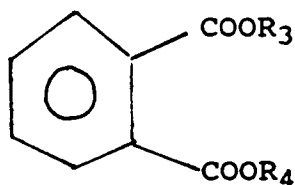
"A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing at least one cyan coupler of formula (I) and a non-light-sensitive layer adjacent said silver halide emulsion layer, characterised in that said silver halide emulsion layer contains at least one compound of formula (II), and in that said non-light-sensitive layer also contains at least one compound of formula (II);

Formula (I)



wherein X is a hydrogen atom or a group which can be split off by a coupling reaction with an oxidized product of an aromatic primary amine color developing agent; R<sub>1</sub> is an aryl group or a heterocyclic group; and R<sub>2</sub> is a ballasting group such that said cyan coupler of formula (I) and the cyan dye formed from said cyan coupler are nondiffusible;

Formula (II)



wherein R<sub>3</sub> and R<sub>4</sub> each is an alkyl group, an alkenyl group, or a cycloalkyl group each having from 3 to 20 carbon atoms, or an aryl group having from 6 to 20 carbon atoms.

II. Considering the following documents

- (1) DE-A-2 835 324
- (2) EP-A-0 028 099
- (3) US-A-3 758 308
- (4) US-A-3 880 661

the Opposition Division concluded that the technical problem underlying the patent in suit was to provide a silver halide colour photographic material with improved graininess the dye formed from which is not discoloured in the bleaching or bleach-fixing process, and which has a desirable spectral absorption characteristic and improved stability against aging. While document (1) disclosed a photographic material which differed from that of the patent in suit only by the presence of a cyan coupler of different structure, there was no incentive why a person skilled in the art should have replaced the known cyan coupler by a coupler of the type employed according to the patent in suit, in order to solve the above-defined problem. The fact that such couplers were already known in the art was held only sufficient to demonstrate that a skilled person could have done so since these couplers

could only be expected to solve parts of the complex technical problem set out above. In particular the cited prior art did not provide a suggestion to incorporate a "coupler solvent" of formula II in a non-light-sensitive layer not containing a coupler.

III. The appeal was filed on 4 March 1989 and the appropriate fee was paid at the same date. A statement of grounds of appeal was received by telecopy on 24 May 1989, confirmed by mail received 29 May 1989. The Appellant (Opponent) referred to two further documents. Oral proceedings took place on 15 February 1991.

IV. The Appellant's submissions can be summarised as follows:

Document (1) generally discloses the use of a compound of formula II according to the patent in suit as a solvent for photographic additives of low water solubility. Such photographic additives were not only couplers but also e.g. UV-absorbers as shown in Example 4 of document (1). It was therefore obvious to use such high-boiling organic solvents also in a non-light-sensitive layer adjacent to the coupler-containing light-sensitive layer, if such a layer were to contain common insoluble additives such as UV-absorbers, the presence of which in that layer was not excluded according to the patent in suit. In these circumstances a person skilled in the art had a good reason to incorporate a compound of formula II in a non-light-sensitive layer adjacent to a light-sensitive layer containing any known coupler, if another water-insoluble additive was also to be incorporated and, consequently, would have done so. Maintenance of the patent in suit would therefore monopolise a known technology. Moreover test results were presented in order to demonstrate that the aging problem was not solved.

V. The Respondent (patent proprietor) relied upon document (2) as the closest state of the art and submitted that the photographic material of the patent in suit showed an unexpected improvement in stability on aging with respect to this known photographic material. In his opinion a person skilled in the art was not induced by only one example in document (1) to consider the use of a phthalic ester as a high boiling solvent in a non-light-sensitive layer in general. Appellant's argument was therefore not supported by document (1), in particular, bearing in mind that phthalic esters were not the only common high boiling solvents used in photographic materials. Even in Example 4 of document (1) phosphoric acid esters are also described and the test results presented by the Appellant contain a number of other suitable compounds. Therefore, a person skilled in the art would not have combined documents (1) and (2). Moreover, documents (3) and (4), no longer relied upon by the Appellant, rather demonstrated that it was undesirable to use the coupler mentioned therein with a coupler solvent at all than invited the skilled person to look for a solution to the above defined problem by using a coupler solvent even in the layer containing the coupler.

During the oral proceedings the Respondent filed 8 different amendments to Claim 1 as granted, named Alternative Requests 1 to 8. Alternative request 1 contains at the end of Claim 1 the proviso that the non-light-sensitive layer has no UV-light absorbing agent incorporated therein. In Alternative Request 2 the proviso at the end of Claim 1 reads as follows:

"said layer not having a photographic additive incorporated therein.",

the rest of Claim 1 remaining unchanged.

- VI. At the end of the oral proceedings the Appellant declared that he had no objections against the maintenance of the patent in suit on the basis of Claim 1 according to the Respondent's alternative request 2.
- VII. The Appellant requests that the decision under appeal be set aside and the patent revoked.

The Respondent requests that the appeal be dismissed and the patent be maintained as granted.

By way of auxiliary requests he requests maintenance of the patent in suit on the basis of one of the eight alternative requests in the sequence of their numbers, submitted during oral proceedings.

In the light of the Appellant's statement referred to in paragraph VI above, the Board construes the Appellant's request as being only directed against maintenance of the patent on the basis of the Respondent's main and first auxiliary request.

#### Reasons for the Decision

1. Having regard to the facts set out in paragraphs I and III above, the appeal is admissible.
2. The Board has considered the documents submitted by the Appellant in the appeal proceedings and has not found them more relevant than documents (1) and (2) submitted in due time. Consequently the Board has decided to disregard them pursuant to Article 114(2) EPC.

### 3. Main request

- 3.1 Since none of the cited documents describe a photographic material having all features mentioned in Claim 1 as granted, the subject-matter of that claim is novel. Since novelty has not been contested, the basic issue to be decided with respect to the request concerned is that of inventive step.
- 3.2 In the Board's judgment the closest state of the art is represented by document (2). This state of the art corresponds to that acknowledged in the patent in suit, page 2, lines 34 to 36 with reference to a corresponding Japanese patent publication and relates to the same type of couplers as used in the patent in suit (see coupler No. 7 on pages 6 and 12 of document (2) and coupler A-11 on page 6 of the patent in suit). Moreover, di-n-butylphthalate is used as a coupler solvent in Examples 3 and 4. These known couplers are said to be stable to ferrous ions, i.e. under the processing conditions necessary for bleaching or bleach fixing, and have a desirable hue for photographic images and only little absorption in the green region of the spectrum (see page 2, lines 16 to 32). As was pointed out by the Appellant during the oral proceedings and not contested by the Respondent, the problem of stability under bleaching or bleach fixing conditions is closely linked to that of improving the graininess, which is also envisaged in the disputed patent, since improved graininess is normally obtained by increasing the silver halide content of the light-sensitive layer, thus requiring more ferrous ion for bleaching during processing. Hence, the partial problems of improving the graininess and the stability against bleaching as well as a desirable spectral absorption characteristic, which the patent in suit sets out to solve (see page 2, the chapter headed "Object of the Invention") are already solved by the photographic material of



document (2). No improvement in this respect over this state of the art has been demonstrated or rendered credible by the Respondent.

Turning to the only remaining technical problem mentioned in the patent in suit, i.e. that of aging, the situation is ambiguous, since, on the one hand, it has been demonstrated by test results in the patent in suit, cf. e.g. Table 1 on page 19 comprising 10 examples of the invention and 6 comparative examples, that an improvement is achieved with various coupler solvents, including dioctylphthalate (compound P-6) and dibutylphthalate (compound P-1) and couplers, including coupler A-11 (i.e. coupler No. 7 of document (2)). However, no test using coupler A-11 and solvent P-1 as coupler solvent and in one adjacent layer is contained in that table. On the other hand, the Appellant together with the statement of grounds of appeal has submitted test results showing that no improvement was obtained with such a combination of coupler A-11 with compound P-1 as the coupler solvent and as an additive in one adjacent layer. In these circumstances, the Board concludes that an improvement of the aging properties is not achieved over the whole range of photographic materials comprised by Claim 1. Hence the technical problem solved by the claimed subject-matter cannot be seen in improving the aging properties. It can, however, be seen in providing a further photographic material retaining the balance of the above-mentioned desirable properties, including a good stability on aging.

- 3.3 In the patent in suit it is proposed to solve this problem essentially by using a phthalic ester of formula II as a coupler solvent for a phenolic cyan coupler of formula I in a light-sensitive layer and incorporating such a phthalic ester of formula II in at least one non-light-

sensitive layer adjacent to the coupler-containing layer of an otherwise conventional photographic material. All these features are considered to contribute to the solution of the above technical problem. It follows from the test results mentioned in the preceding paragraph, that this less demanding problem has been effectively solved by the photographic material according to Claim 1.

- 3.4 The next issue to consider is whether the cited documents would have suggested to a skilled person to solve the problem by these features. Having regard to the fact that the subject-matter of the patent in suit differs from that of document (2) by the presence of a phthalic ester of formula II in a non-light-sensitive layer adjacent to the light-sensitive layer containing the cyan coupler, this document is not helpful in this respect since it is only concerned with improvements of the couplers but not with the function of high-boiling solvents such as the phthalic esters of formula II in photographic layers free of such couplers. Essentially the same consideration applies to documents (3) and (4). Moreover, in document (3) it is stated that the presence of such a compound should rather be avoided even in the layer containing the coupler (see column 5, lines 22 to 26). Similar information may be derived from document (4), column 15, lines 5 and 6.

Document (1), however, relates to a class of phthalic acid esters derived from cycloaliphatic alcohols. This class of compounds is comprised by formula II of the patent in suit (see also the preferred compound P-3 at the bottom of page 13). In the paragraph bridging pages 3 and 4 of the description in document (1) it is stated that these esters are particularly suitable for dispersing water insoluble photographic additives in gelatine layers. According to the paragraph bridging pages 1 and 2 and Claim 6, such photographic additives are not only couplers, but also

e.g. UV-absorbing agents, developing agents and antioxidants (i.e. reducing agents). Therefore a person skilled in the art would find it a useful alternative to the photographic material according to document (2) to incorporate such a phthalic ester not only in the layer containing the coupler, but also in any other layer containing a photographic additive, e.g. a UV absorbing agent, including a layer adjacent to that containing the cyan coupler. The Respondent's submission that a person skilled in the art would not have considered the possibility of using a phthalic ester in two adjacent layers, one of them containing a phenolic coupler, among the numerous other alternatives since there was no systematic technical teaching in the prior art to use the same class of high boiling solvents in adjacent layers is based on a too narrow view of the disclosure of document (1). It is true that in Example 4 of document (1) the use of dibutylphthalate in layers 5 and 4 was incidental and, in any case, in combination with a different (naphthol type) coupler; however the disclosure in document (1) is a general one and not limited to this specific example, but extends to any silver halide containing photographic material (see Claim 1) including cyan couplers of any structure (see Claim 6). In the Board's judgment, the selection of an obvious possibility for the solution of an existing technical problem is not rendered unobvious simply by the fact that a number of further possibilities were also at hand. In other words, the choice among a number of obvious possibilities to solve a given technical problem does not involve an inventive step.

For this reason it was, in the Board's judgment, obvious to incorporate a phthalic ester of formula II not only in the coupler-containing layer of a photographic material according to document (2), but also in a non-light-sensitive layer adjacent thereto, if it was desired to

incorporate in the said non-light-sensitive layer a water-insoluble photographic additive such as a UV-absorbing agent.

This possibility being clearly covered by the subject-matter of Claim 1 (see the patent specification, page 16, lines 45 to 53), the subject-matter of this claim lacks inventive step and the patent cannot, therefore, be maintained on the basis of that claim. The Respondent's main request must fail for this reason, although not all claims of this request were challenged, since the non-compliance of one claim of this request with the requirements of the EPC renders the whole request unallowable, see also T 182/89 of 14 December 1989, point 4 of the reasons (for headnotes of this decision see OJ 1990/8).

#### 4. First auxiliary request

4.1 Claim 1 according to this request is limited with respect to Claim 1 of the main request by the proviso that the non-light-sensitive layer adjacent to the light-sensitive layer containing the coupler does not contain a UV-light absorbing agent. The alternative excluded by this proviso was expressly mentioned as forming part of the claimed subject-matter in the patent in suit (page 16, line 45) and in the patent application as filed, page 33, line 13. The exclusion of such an alternative does not offend against Article 123 EPC, see also T 4/80 OJ EPO 1982, 149, paragraph 2 of the Reasons.

4.2 Since the novelty of Claim 1 of the main request has already been established (see paragraph 3.1 above) any limited claim must also relate to novel subject-matter.

4.3 The presence of the above disclaimer does not substantially change the situation with respect to the closest state of the art and the technical problem set out in paragraphs 3.2 and 3.3 above. As it is already explained in detail in paragraph 3.4 above, the general disclosure in document (1) relates to the use of certain phthalic esters as high boiling solvents for dispersing photographic additives in gelatine layers of photographic materials in general and is not limited to couplers or UV-light absorbing agents. In particular, Example 4 is merely an example without a limiting effect. Thus, in the Board's judgment, the claimed subject-matter which continues to comprise the presence of photographic additives other than UV-light absorbing agents in a non-light-sensitive layer adjacent to the light-sensitive layer containing a phenolic coupler and a phthalic ester, is obvious with respect to the disclosure in documents (1) and (2) for substantially the same reason as Claim 1 of the main request. Thus, the Respondent's first auxiliary request must also fail.

5. Second auxiliary request

5.1 As already indicated in part VI above, the Appellant did not object to maintaining the patent in amended form on the basis of that request. There is, therefore, no dispute among the parties that the respective Claim 1 relates to a patentable invention. Having examined the matter on its own motion (Art. 114(1) EPC, the Board has no objections against maintaining the patent on that basis, for the reasons briefly set out in the following paragraphs.

5.2 Claim 1 according to this request is further limited with respect to Claim 1 of the preceding request by the proviso that the said non-light-sensitive layer does not contain a

photographic additive. This limitation excludes all optional features from the subject-matter of Claim 1 as granted which are mentioned in the patent in suit, page 16, lines 45 to 58. Thus, no objection under Article 123 EPC arises against this limitation.

5.3 Regarding novelty, the statement in paragraph 4.2 above applies here, too. With respect to obviousness, it follows from what is said in paragraph 3.4 above, that there was no obvious reason derivable from documents (1) to (4), especially documents (1) and (2), why a person skilled in the art would have considered incorporating a phthalic ester in a gelatine layer not containing any photographic additive. Thus, the combination of technical features now claimed is not obvious in the light of the technical problem set out in paragraph 3.3 above, since the considerations leading to the rejection of the Respondent's main and first auxiliary request are no longer applicable.

5.4 The dependent Claims 2 to 15 relate to specific embodiments of the subject-matter of Claim 1, thus they relate to patentable subject-matter as well. Moreover, Claims 5 to 7 and 11 have not been the subject-matter of the opposition and appeal proceedings.

#### Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The main request and auxiliary request 1 are rejected.

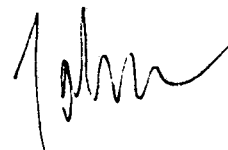
3. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of auxiliary request 2, as submitted in the course of oral proceedings.

The Registrar:



M. Beer

The Chairman:



K.J.A. Jahn