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D E C I S I O N
of 28 October 1999

Case Number: T 0917/94 - 3.3.6

Application Number: 88900658.1

Publication Number: 0294461

IPC: G03C 1/83

Language of the proceedings: EN

Title of invention:

Solid particle dispersion filter dyes for photgraphic compositions

Patentee:

Eastman Kodak Company (a New Jersey corporation)

Opponent:

Fuji Photo Film Co., Ltd.

Headword:

-

Relevant legal provisions:

EPC Art. 54(1), (2), 56, 84, 123(2)

Keyword:

"Novelty (no) - technical term (here: dispersion) describing state of the art interpreted according to its normal scientific meaning (main request; see point 1.2.4)" "Novelty (no) - incorporation of a redundant technical feature does not impart novelty to known subject-matter (auxiliary request 1; see point 2.2)"

"Inventive step (no) - obvious combination of technical features (auxiliary request 2)"

"Admissibility of an amendment (no) - disclaimer having no basis in the application as filed and excluding prepublished most relevant state of the art is inadmissible (auxiliary request 3; see point 4.)"

Decisions cited:

T 0170/87, T 0645/95, T 0863/96

Catchword:

1. The omission of a feature of a claim does not contravene Article 123(2) EPC, if this feature is implicitly defined by two other features and, being therefore redundant, its omission creates no subject-matter extending beyond that of the application as filed (point 1.1 of the Reasons for the Decision).

2. An amendment having no basis in the application as filed and disclaiming subject-matter which the Board would still have to consider in the context of inventive step evaluation is not in compliance with the requirements of Article 123(2) EPC and, therefore, inadmissible: only the exclusion of accidentally anticipatory prior art is admissible without having a basis in the application as filed, (point 4 of the Reasons for the Decision; see also T 170/87, T 645/95, T 863/96).



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Boards of Appeal

Chambres de recours

Case Number: T 0917/94 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 28 October 1999

Appellant:
(Proprietor of the patent)

Eastman Kodak Company
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Respondent:
(Opponent)

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Representative:

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 12 October 1994
revoking European patent No. 0 294 461 pursuant
to Article 102(1) EPC.

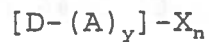
Composition of the Board:

Chairman: P. Krasa
Members: G. N. C. Rath
W. Moser

Summary of Facts and Submissions

- I. This appeal lies from the Opposition Division's decision revoking the European patent 0 294 461; Claim 1 of the patent as granted read:

"A photographic element comprising a support and a radiation-sensitive layer, characterized in that at least one layer of the element comprises a dispersion of solid particles of a filter dye having the formula:



where D is a chromophoric light-absorbing moiety, which comprises an aromatic ring when y is 0, and which may or may not comprise an aromatic ring when y is not 0,

A is an aromatic ring bonded directly or indirectly to D,

X is a sulphonamido group, either on A or on an aromatic ring portion of D, with an ionizable proton that causes the dye to exhibit a pKa of 4 to 11 in a 50/50 mixture on a volume basis of ethanol and water,

y is 0 to 4, and
n is 1 to 7,

said dye having a log partition coefficient of from 0 to 6 when in the nonionized form."

In dependent Claims 2 to 6 further specifications can be found of the sulphonamido group, the dispersion medium and the particle diameter, respectively.

- II. An opposition was filed by the Respondent (Opponent) on the grounds of lack of novelty (Article 54(1), (2) EPC)

and lack of inventive step (Article 56 EPC) and was based, inter alia, on the following documents:

- (1) US-A-4 294 917,
- (2) US-A-4 311 787,
- (3) US-A-4 294 916,
- (4) US-A-4 092 168,
- (7) Translation of JP-A-61-204630 and
- (15) US-A-3 933 798;

furthermore, it was submitted that the subject-matter of the patent in suit extended beyond the application as filed (Article 123(2) EPC).

III. In its decision, the Opposition Division held that the claimed subject-matter was rendered obvious by the subject-matter disclosed in documents (1) to (4), (7) and (15).

IV. An appeal was filed against this decision. During the oral proceedings which took place before the Board on 28 October 1999, the Appellant (Proprietor) filed 4 sets of claims as a main request and three auxiliary requests:

(A) Main request

Claims 1 to 6 of the main request are identical with Claims 1 to 6 as granted.

- (B) Auxiliary request 1 (designated as First Alternative Set of Claims)

Claim 1 differs from Claim 1 of the main request in that the following passage has been added:

"said dye being substantially aqueous insoluble at a pH of 6 or below and substantially aqueous soluble at a pH of 8 or above."

Claims 2 to 6 correspond to those of the patent as granted.

- (C) Auxiliary request 2 (designated as Second Alternative Set of Claims)

Claim 1 differs from Claim 1 of the main request in that the passage "and wherein the dye particles in the dispersion have a mean diameter of less than 10 μm " has been added.

Claim 2 corresponds to Claim 6 as granted, Claims 3 to 5 correspond to Claims 2 to 4 as granted.

- (D) Auxiliary request 3 (designated as Third Alternative Set of Claims)

Claim 1 differs from that of the main request in that it contains a disclaimer which excludes the subject-matter described in document (7) (page 6, line 21 to page 7, line 13).

Claims 2 to 6 correspond to those of the patent as granted.

V. The Appellant's submissions both in writing and during oral proceedings can be summarized as follows:

Document (4) taught to incorporate dyes having a carboxyl group into photographic material, said dyes being insoluble and non-diffusible in gelatin layers; document (15) taught to incorporate bis-pyrazolone oxonol dyes into antihalation layers, said dyes being provided with an alkyl sulphonamidophenyl moiety, the group sulphonamido $-SO_2-NH_2$ being designated by the prefix "sulphamoyl" when cited as principal group having priority over the amide group, so that they were water-insoluble and less mobile in gelatin matrices than dyes of similar structure without said sulphamoyl group; there was no hint in the prior art documents to replace the carboxyl group or the sulphamoyl group with any other substituent, let alone a sulphonamido substituent.

Document (7) did not disclose that the dyes comprising a sulphonamido group were present in the photographic material as a dispersion of solid particles; it could be inferred from document (7) that the sulphonamido substituents of its dyes could not be transferred to dyes of structures being different from those of document (7), for instance to dyes as disclosed in documents (4) or (15).

VI. The Respondent's submissions in writing and during oral proceedings were in essence as follows:

(i) with respect to the main request:

- by omitting the solubility dependence of the dye upon the pH in Claim 1, the Appellant created new subject-matter with respect to the application as filed;

- the subject-matter of Claim 1 lacked novelty over document (7);
- (ii) with respect to auxiliary request 1
- the term "substantially" rendered unclear the meaning of the technical features "substantially soluble" and "substantially insoluble" of Claim 1
 - the subject-matter of Claim 1 would lack novelty over document (7);
- (iii) with respect to auxiliary request 2
- there was a lack of inventive step since it was obvious to replace the substituents of the dyes known from documents (1), (2) or (4) by a sulphonamido substituent known from documents (5), (6) or (7).
- (iv) with respect to auxiliary request 3
- the subject-matter of Claim 1 contravened Article 123(2) EPC since the disclaimer was not allowable in view of the jurisprudence of the Boards of Appeal.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents submitted during oral proceedings:

- (a) main request: main set of claims, i.e. claims 1 to 6 or
- (b) first auxiliary request: first alternative set of claims, i.e. claims 1 to 6; or

(c) second auxiliary request: second alternative set of claims, i.e. claims 1 to 5;

(d) third auxiliary request: third alternative set of claims, i.e. claims 1 to 6.

VIII. The Respondent requested that the appeal be dismissed.

IX. At the end of the oral proceedings the Board's decision was announced.

Reasons for the Decision

1. *Main request*

1.1 Article 123(2) EPC

Claim 1 differs from Claim 1 of the application as filed by the omission of the dependence of the aqueous solubility of the dyes upon the pH, which - after amendment of obvious clerical errors - was given in the latter claim as

"...substantially aqueous insoluble at a pH of 6 or below and substantially aqueous soluble at a pH of 8 or above."

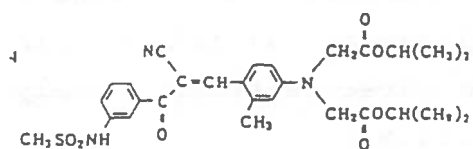
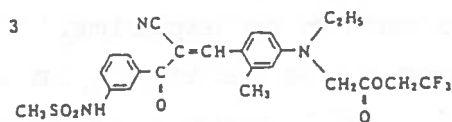
It has to be decided whether or not this omission amounts to an amendment extending the subject-matter of Claim 1 beyond the contents of the application as filed.

The Appellant credibly explained during oral proceedings that in Claim 1 the filter dye is sufficiently defined by the chemical formula, the pKa and the log partition coefficient (hereinafter

abbreviated by log p). This is confirmed by the description as originally filed, indicating that the solubility characteristics were a function of the pKa and the log p of the respective dye (page 4, lines 20 to 27). Hence, the solubility profile of a dye is implicitly defined by these two parameters given in Claim 1 or, in other words, the feature "solubility" is in this case redundant or implied in view of the other features, namely structure, pKa and log p. The Board, therefore, concludes that under the particular circumstances of this case the omission from Claim 1 of the feature "solubility" creates no subject-matter extending beyond that of the application as filed and, consequently, that the subject-matter of Claim 1 does not contravene Article 123(2) EPC.

1.2 Novelty (Article 54 EPC)

1.2.1 Document (7) discloses a multilayer halogen halide photographic photosensitive material containing a dye layer (page 3, lines 6 to 8) containing filter dyes comprising an alkylsulphonamide substituent. The formulae of the filter dyes No. 3 and No. 4 are as follows:



1.2.2 It is clear therefrom that the dyes 3 and 4 of document (7) fall within the range of compounds defined by the formula of Claim 1. As submitted by the Respondent, the two dyes exhibit the pKa values of 8.72 and 8.70, respectively in a 50/50 mixture on a volume basis of ethanol and water, and a log p of 3.30 and 3.22, respectively.

1.2.3 The Appellant questioned the said log p values since the Respondent did not give the details of their measurement. However, in the patent in suit, the log p is said to be "a well-known measurement of the solubility of a compound in aqueous liquids compared to its solubility in non-polar organic solvents" (page 4, lines 15 to 18) without giving further information regarding the measurement technique. In synthesis examples 1 and 2 of the patent in suit, which are the only ones mentioning a log p, it was merely indicated that the log p of the two dyes concerned was determined to be 4.66 and 3.07, respectively (page 25, line 46 and page 26, line 32), without informing on the measurement. The Board concludes therefrom that the Appellant deemed it not to be necessary to specify any particular testing conditions as those were part of the common general knowledge of a skilled person. Under such circumstances the Respondent cannot be required to give more information on experimental details than the Appellant deemed to be necessary in respect to the measurement of a well-known parameter. In the absence of experimental evidence to the contrary, the Board concludes that the log p values submitted by the Respondent are reliable. It follows that the dyes disclosed in document (7) fall within the range of dyes defined by the three features, namely structure, pKa and log p of Claim 1.

1.2.4 It has now to be decided whether document (7) discloses also that the dyes - which fall, as demonstrated, under the definition of the dyes of Claim 1 - are present in the photographic element in the form of a dispersion of solid particles.

The dye of document (7) can be dispersed in an emulsion layer or other hydrophilic colloid layer (antihalation layer, filter layer) by using various known methods (page 11, lines 15 to 18). Document (7) further discloses:

"(1) A method for dispersing or dissolving the invention's dye directly in an emulsion layer or hydrophilic colloid layer, or after dissolving or dispersing in an aqueous solution or a solvent it is used in an emulsion layer or hydrophilic layer" (page 11, lines 19 to 23).

"(2) Dispersion by addition to a hydrophilic colloid solution of a solution prepared by dissolving a compound in oil, i.e., a water-insoluble solvent whose boiling point is higher than about 160°C " (page 12, lines 3 to 6).

The Board agrees with the Appellant that the term "dispersion" used in point (2) refers to the formation of an emulsion from a dye-solution in an oil by incorporating this solution (i.e dispersing it) in a hydrophilic colloid solution. This is one of the typical situations where a skilled person applies the term "dispersion" since an emulsion is a liquid-liquid dispersion.

However, under point (1) the direct incorporation of the dye into an emulsion layer is disclosed. This can be done by dispersing or dissolving the dye in the respective layer.

The Board holds that the option between "dissolving" and "dispersing in an aqueous solution or solvent" (document (7), page 11, line 21) describes a technically meaningful difference. The dye being in solid form, "dispersing" involves, per definition, the distribution of solid particles constituting the dispersed phase in a continuous phase, the dispersion medium. The Board does not see any justification for the Appellant's contention that in document (7) the term "dispersing" was deprived of its scientific meaning and had a more general meaning like "adding". Rather to the contrary, the use of the term "dispersion" in relation to the emulsion (see the above quoted no. 2) confirms that this term is used in document (7) with its normal scientific meaning as understood by those skilled in the art.

Therefore, document (7) clearly and unambiguously discloses a photographic element in which the contemplated dyes are present as a dispersion of solid particles (page 2, Claim 1, in combination with page 11, lines 19 to 20).

- 1.2.5 In view of the above demonstrated complete identity of the technical features, the Board decides that the subject-matter disclosed in document (7) anticipates the subject-matter of Claim 1; consequently, the latter lacks novelty (Article 54 EPC).

2. *Auxiliary request 1*

2.1 Articles 123(2) and 84 EPC

- 2.1.1 The amendment in Claim 1 (see point IV(B) above) is based on page 4, lines 21 to 23, of the application as filed, so that there are no objections under Article 123(2) EPC.

2.1.2 The subject-matter of Claim 1 is also clear within the meaning of Article 84 EPC. When considering the term "substantially" which qualifies the dye's insolubility at a pH of 6 (or below) and the dye's solubility at a pH of 8 (or above), one has also to take into account the technical implications of the dye's solubility profile in dependence of the pH. Whereas at the low pH, these solubility characteristics have to be such as to avoid migration of the dye in the photographic element, at the high pH, they have to safeguard a smooth and quick elution of the dye from the photographic element during processing. Therefore, the features "substantially insoluble" and "substantially soluble" can be construed as functional features which are clear to a person skilled in the art against the background of the factual situation of the present case.

2.1.3 The expression "insoluble at a pH of 6 or below" is also clear. Whereas it is true that the expression also covers a dye which is insoluble, e.g. at a pH of 4, but (moderately) soluble at a pH of 5 or 6, this relates rather to the breadth of the claim, but cannot mean that it is unclear. The same considerations apply mutatis mutandis to the expression "soluble at a pH of 8 or above".

2.1.4 For these reasons, the Board decides that Claim 1 complies with the requirements of Article 84 EPC.

2.2 Article 54(1), (2) EPC

As the characteristics referring to the dye's (in)solubility are a consequence of the pKa and the log p values (see application as filed, page 4, lines 21 to 27), they are not an additional distinctive feature (see above point 1.1). Therefore, the addition of these characteristics does not change the subject-matter

already claimed in the main request. Consequently, the auxiliary request 1 must fail for the same reasons as the main request (see points 1.2 to 1.2.4); the subject-matter of Claim 1 lacks novelty (Article 54 EPC).

3. *Auxiliary request 2*

3.1 Articles 123(2) and 84 EPC

The amendment in Claim 1 (see point IV(C) above) is clear and supported by the application as filed (page 27, line 41). So, there are no objections under Articles 123(2) and 84 EPC.

3.2 Novelty (Article 54 EPC)

The Board is satisfied that the subject-matter of Claim 1 is not disclosed in any of the citations and is, therefore, novel; since no objections have been raised in this respect, a detailed reasoning for this finding is not necessary.

3.3 Article 56 EPC

3.3.1 The patent in suit concerns a photographic element comprising a solid particle dispersion filter dye.

3.3.2 From the patent in suit, it can be deduced that the object of the alleged invention was to avoid migration during coating and to achieve complete removal of these dyes during processing of the photographic material (page 2, lines 15 to 17).

3.3.3 Dyes to be used for the same purpose and complying with these requirements are disclosed in document (7) which the Board takes as starting point for evaluating the inventive step of the subject-matter of Claim 1 of

auxiliary request 2 (page 6, line 17, to page 7, line 13, in combination with page 6, lines 3 to 11). These dyes can be present in the photographic element in solid form as dispersion (see point 1.2.3, above).

3.3.4 Now, the technical problem which the invention addresses is to be determined in the light of the state of the art disclosed in document (7).

This citation discloses that the same objectives as aimed at in the patent in suit can be solved by using the dyes disclosed in it (page 6, line 16, to page 7, line 9). The Dmax values given for dissolved dyes in table II on page 41 are indicative for their high dyeing affinity and, on processing, high decolouring power, and therefore, supporting evidence for this statement.

Similar results are reported in the patent in suit for, inter alia, the results of solid particle dispersion filter dyes 6 to 8 in table XII of the patent in suit. This table displays Dmax-values for the three dyes before and after water washing, and before and after decolouration; however, these results are not comparable with those of document (7), because the respective testing conditions differ: for instance, in document (7) the water washing takes 3 minutes whereas in the patent in suit 5 minutes; further, the Dmax values reported in table XII of the patent in suit relate to solid particle dispersions. In the absence of valid experimental evidence no improvement, i.e. no reliable higher image quality, no more effective decolourisation or no quicker removal of the filter dye as compared with the dyes of document (7) can be acknowledged for the subject-matter of Claim 1.

Nevertheless, the Board is satisfied that the claimed photographic element meets the objective as defined in the patent in suit by utilising the filter dyes as

defined in Claim 1 (see above point 3.3.2).

- 3.3.5 It follows that in view of document (7), the technical problem underlying and solved by the subject-matter of Claim 1 of auxiliary request 2 consists in providing further photographic elements comprising filter dyes which do not wander during coating and are fully solubilized during processing.

It remains to be decided whether or not the solution as claimed to the existing technical problem was obvious in view of the prior art.

The solid filter dye of Claim 1 of auxiliary request 2 is distinguished from that of document (7) only by having a particle size of less than 10 μm ; this feature was not explicitly disclosed in document (7).

Filter dyes having such a particle size and used for the same purpose as those of the patent in suit were known from document (1) which disclosed particles of solid dispersions of less than 1 μm (column 3, lines 62 to 64) and their superior performance in antihalation layers (see below point 3.3.6).

It was therefore obvious for a skilled person when manufacturing the solid dyes of document (7) to adjust the size of the dye particles to that disclosed in document (1) for solving the existing technical problem.

The Appellant submitted during oral proceedings that document (7) did not refer to a mill for grinding the dyes. This argument is not relevant since this process feature is not part of Claim 1 of the patent in suit and was, anyway, known in the art (see the patent in suit, page 23, line 51).

In support of inventive step, the Appellant referred also to the comparative examples in his letter dated 26 February 1993, pages 8 and 9; a comparison was made between dyes bearing a carboxylic group over dyes which lack such a group; since, however, dyes bearing a carboxylic group do not represent the most relevant state of the art, this comparison is not relevant.

During oral proceedings, the Appellant emphasised that document (7) indicated that a dye substituted in p-position was inferior to a dye substituted in m-position with a sulphonamido group (page 42, lines 1 to 7).

However, the formula of Claim 1 of the patent in suit does not place any restrictions on the position of the sulphonamido substituent, let alone a confinement to the p-position in particular, but includes also the m-substituted dyes known from document (7). Therefore, the substitution pattern being no distinguishing feature, this argument must fail.

It follows that the subject-matter of Claim 1 of auxiliary request 2 was rendered obvious by documents (7) and (1).

- 3.3.6 No other conclusion could be drawn even if one takes document (1) as starting point for evaluating inventive step as suggested by the Appellant.

Document (1) concerns photographic silver halide material containing a dye filter or a dye antihalation layer; the dyes are preferably present as a solid dispersion (column 3, lines 29 to 32) since they exhibit a greater range of useful spectral absorption than when coated by other means; the dyes of document (1) comprise a hydrophilicising group which promotes hydrogen bonding. The presence of such a group

helps the washing out of the residues of the dye from the photographic material after the dye has been destroyed by bleaching. However, in spite of the hydrophilicising group, the dye should also be water-insoluble (column 2, lines 39 to 46). The average particle size of the dye is less than 1 μm (column 3, lines 57 to 64).

Document (1), which points to the washing-out facilities as well as to water insolubility differs from the patent in suit in that the dyes of document (1) do not bear a sulphonamido group.

It follows that, starting from document (1), the problem underlying and solved by the subject-matter of Claim 1 was to provide a photographic element comprising a dye having a good balance between solubility, which is important for washing out, and insolubility, which is important for the avoidance of diffusion. The skilled person looking for a solution of this technical problem would consult document (7) which refers to the same dye properties (page 4, line 16 and lines 20 and 21) and relates to the same technical problem. In view of document (7), documents (4) and (15), from which the Appellant concluded that the skilled person would not be led to replace the respective carboxyl and sulphamoyl groups with any other substituent (letter dated 10 February 1995, pages 4 to 10), are less relevant. The skilled person learning from document (7) that the sulphonamido group imparts the desired solubility properties to the underlying dye (see point 3.3.4 above) would have tried with a reasonable expectation of success to incorporate a sulphonamido group into the dyes known from document (1) to solve the above identified problem.

So, even when starting from document (1), it was obvious to try the sulphonamido substituent known from document (7) with dyes of the particle size known from document (1); the conclusion is the same as when starting from document (7): the subject-matter of Claim 1 of auxiliary request 2 is lacking an inventive step.

4. *Auxiliary request 3*

The subject-matter of Claim 1 of auxiliary request 3 differs from that of the main request in that it contains a disclaimer which excludes the subject-matter described verbatim in document (7) (page 6, line 21 to page 7, line 13).

In the Board's judgement, this amendment has no basis in the application as filed. This has also been conceded by the Appellant.

According to the case law of the Boards of Appeal, it is permissible to exclude a particular state of the art from the claimed subject-matter by means of a disclaimer, even, if the original application gives no basis for such an exclusion (see for example decision T 170/87, OJ EPO 1989, 441, Reasons for the decision, point 8.4.1).

However, a disclaimer is not permissible if, thereby, an otherwise obvious subject-matter shall be rendered inventive since this would change the nature of the alleged invention and, thus, not comply with the requirements of Article 123(2) EPC (see T 170/87, OJ EPO, 1989, 441, Reasons for the decision, point 4.4.4). In the present case, document (7) undisputedly relates not only to the same field as that of the claimed invention, but even to the same technical problem as in the patent in suit. Therefore, even if the disclaimer

in Claim 1 imparted novelty to the claimed subject-matter, the Board would still have to consider this citation when assessing inventive step of the remainder, since this document discloses the most relevant prior art (see points 3.3.3 to 3.3.5 above). Thus, the circumstances of this case are not those very exceptional ones in which particular prior art accidentally anticipates claimed subject-matter without having otherwise a bearing on the patentability of the latter.

For the above reasons, the amendment of Claim 1 by incorporation of the said disclaimer is not in compliance with the requirements of Article 123(2) EPC. Therefore, auxiliary request 3 must fail (see also T 645/95, paragraph 2, lines 1 to 11, not published in the OJ EPO; T 863/96, point 3.2, not published in the OJ EPO).

5. For the reasons given above, the respective Claims 1 of all the requests are not allowable; consequently all these requests must fail.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:


↓
G. Rauh


P. Krasa