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D E C I S I O N
of 28 March 1995

Case Number: T 0446/92 - 3.3.1

Application Number: 85108303.0

Publication Number: 0167168

IPC: G03C 7/32

Language of the proceedings: EN

Title of invention:
Silver halide photographic material

Patentee:
FUJI PHOTO FILM CO., LTD.

Opponent:
Agfa-Gevaert AG

Headword:
DIR-hydroquinones/FUJI

Relevant legal provisions:
EPC Art. 56, 113(1)
EPC R. 58(4)

Keyword:
"Inventive step (yes, after amendment)"
"One-way-street"
"Presence of an additional effect not established for all alternatives comprised by the original claims"
"No need to send a communication under Rule 58(4) if a party has decided not to be represented at oral proceedings"

Decisions cited:
T 0192/82, G 0004/92, G 0001/88, T 0202/92, T 0133/92,
T 0210/90, T 0219/83,

Catchword:

Where an Opponent, who has been duly summoned, is not represented at oral proceedings before a Board of Appeal, the decision of the Board to maintain the patent in suit in amended form in accordance with a request of the Patentee, submitted during these oral proceedings, may nevertheless be given orally pursuant to Rule 68(1) EPC at the end of these oral proceedings if there are no new facts or evidence dealt with during these oral proceedings (cf. opinion G 0004/92 of the Enlarged Board of Appeal; OJ EPO 1994, 149). Under these circumstances, the application of Rule 58(4) EPC may be dispensed with because the patent in suit is maintained with an amended text emanating from and approved by the patentee and, furthermore, because the Opponent's deliberate decision to refrain from being represented at oral proceedings before the Board is to be regarded as being tantamount to a tacit abandoning of his right to present comments pursuant to Article 113(1) and Rule 58(4) EPC (point 6 of the reasons).



Case Number: T 0446/92 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 28 March 1995

Appellant:
(Proprietor of the patent) FUJI PHOTO FILM CO., LTD
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Stockmair & Partner
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Respondent:
(Opponent) Agfa-Gevaert AG
-Patentabteilung-
Postfach
D-51368 Leverkusen (DE)

Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 10 October 1991, with
written reasons issued on 10 January 1992,
revoking European patent No. 0 167 168 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: F. Antony
Members: R. K. Spangenberg
W. Moser

Summary of Facts and Submissions

- I. The present appeal was filed on 13 March 1992 and the appropriate fee was paid on the same date. It lies from the decision of the Opposition Division of the EPO, delivered orally on 10 October 1991 and with written reasons posted on 10 January 1992, by which European patent No. 0 167 168 was revoked. The revoked patent was granted in response to European patent application No. 85 108 303.0, filed on 4 July 1985, and claiming priority of 4 July 1984 and 4 April 1985 from two earlier applications in Japan. The patent specification contained 6 claims, relating to silver halide photographic materials. The decision under appeal was based on the patent as granted (main request) and two sets of claims submitted by way of auxiliary requests during the oral proceedings held on 10 October 1991.
- II. The Opposition Division, after consideration of the following documents,
- (1) US-A-3 379 529
 - (2) US-A-3 620 746
 - (3) DE-A-2 417 914
 - (4) US-A-4 345 024
 - (5) DE-A-3 209 486

held that the subject-matter of Claim 1 according to each of the three sets of claims did not involve an inventive step.

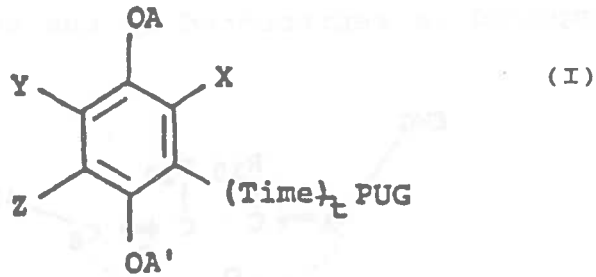
It considered that the problem underlying the contested patent was to provide a silver halide photographic material having excellent performance and colour reproduction and giving excellent sharpness to the image, and that this problem was solved by a

photographic material containing a compound releasing a development inhibitor which was further converted in the developing solution to a compound which had no substantial development restraining ability or which showed a marked decrease in such ability, thus avoiding the contamination of the development solution by the inhibitor. It further considered that a similar problem was addressed in document (5), arising from the contamination of the development solution by inhibitors released from development-inhibitor releasing couplers (DIR-couplers), and was there solved by releasing certain development inhibitor compounds from a coupler present in the photographic material, which compounds were said to be deactivated in the developing solution, whereas the solution according to the patent in suit differed from that known solution of the analogous problem only in that the development inhibitor was released from a developing agent rather than from a coupler. The Opposition Division found that a skilled person would have inferred from documents (1) to (4) that all development-inhibitors known to be released from DIR-couplers, including those disclosed in document (5), would also be useful development inhibitors to be released from hydroquinone compounds. Therefore, the solution of the present problem was held to be obvious.

III. A Statement of Grounds of Appeal was received on 19 May 1992. The Statement of Grounds was accompanied by a new set of five claims, which substantially corresponded to the set of claims according to the first auxiliary request considered by the Opposition Division. Independent Claims 1 and 2 were worded as follows:

"1. A silver halide photographic material containing at least one compound having a group which after being released from the compound by redox reaction is

converted into a compound having a development restraining ability and which is further converted in the developing solution into a compound which has no substantial development restraining ability or which shows a marked decrease in such ability wherein said compound is represented by the general formula (I):



wherein

A and A' are each hydrogen or a group which can be hydrolysed by alkali;

X, Y and Z are each hydrogen, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, an alkylthio group, or an electron-withdrawing group; or

Y and Z may form a 5- or 6-membered ring through a methylene chain;

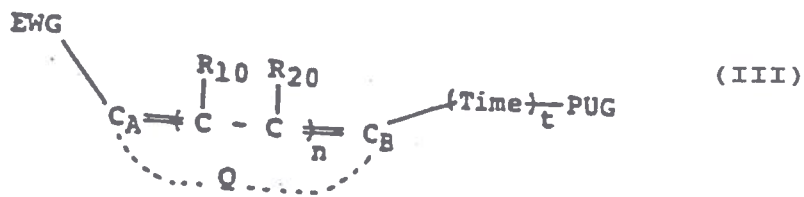
PUG is a group released by reaction with a light-exposed silver halide and/or the oxidized product of the developing agent;

Time is a timing group;

$\theta(\text{Time})_t$ PUG is a group released as $\theta(\text{Time})_t$ PUG first when the oxidation-reduction moiety causes a cross reaction during the development and becomes an oxidized product, and is bonded to the benzene nucleus via a sulphur atom, a nitrogen atom or a selenium atom; and t is 0 or 1.

2. A silver halide photographic material containing at least one compound having a group which after being released from the compound by redox reaction is

converted into a compound having a development restraining ability and which is further converted in the development solution into a compound which has no substantial development restraining ability or which shows a marked decrease in such ability wherein said compound is represented by the general formula (III):



wherein

Q is an atomic group which bonds to C_A and C_B and forms a substituted benzene ring-type oxidation-reduction moiety from which Time-PUG can be released first by oxidation during the photographic development processing;

EWG is an electron-withdrawing group having a Hammett's σ_{para} value exceeding 0.3;

C_A and C_B are each a carbon atom which conjugates EWG with Time-PUG via a substituted ethylene bond or its vinylog, when the compound of formula (III) is oxidized; R_{10} and R_{20} are each a hydrogen atom or an appropriate substituent;

Time and t are the same as defined in claim 1;

PUG is the same as defined in claim 1; and

when t is 0, it is a sulphur atom, a nitrogen atom or a selenium atom and is connected with C_B ; and

n is an integer of 0 or 1."

The Appellant further submitted the results of comparative tests intended to show that the use of development inhibitors released from developing agents instead of development inhibitors released from couplers resulted in improved image quality. The Appellant argued, relying in particular on document (3), that it was not possible to predict that the incorporation of

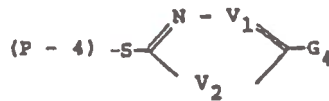
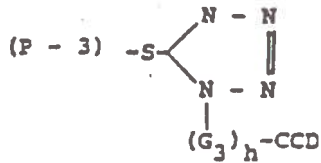
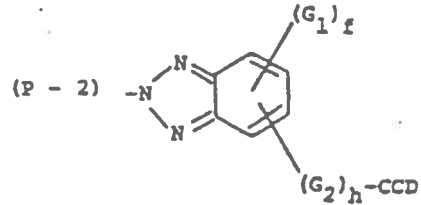
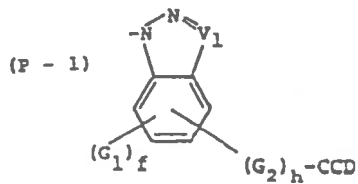
the development inhibitor moieties contained in the development-inhibitor releasing couplers of document (5) into the development-inhibitor releasing redox compounds of the types described in documents (1) to (4) would be suitable to improve the quality of photographic images.

IV. The Respondent contested that the test results submitted by the Appellant showed any surprising improvement and continued to argue that the subject-matter of the contested patent was no more than an obvious combination of the technical teachings of document (5) and any one of documents (1) to (4). In addition, he submitted that the presence of any additional effects would not render the claimed subject-matter non-obvious, since the claimed compounds would in any case have intruded themselves on a skilled person as being the most straightforward solution of the contamination problem.

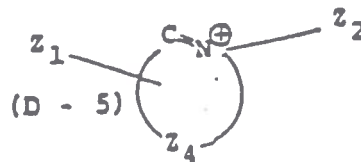
V. Oral proceedings took place on 28 March 1995. The Respondent was duly summoned but informed the Board that he maintained his written submissions and requests, but would not attend these proceedings. Consequently, he did not appear.

VI. During the oral proceedings the Appellant maintained the set of claims submitted together with the statement of grounds of appeal as main request and submitted two further sets of 3 claims each, as first and second auxiliary request.

Claim 1 of the set marked first auxiliary request corresponded substantially to a combination of the features of Claims 1 and 5 of the main request with the further limitation to compounds wherein the group "time" was not present. In this claim the substituent "PUG" is selected from the following groups P-1 to P-4:



(the meanings of G_1 to G_4 , V_1 , V_2 , f and h being of no importance here), and CCD is selected from a group of 16 residues, of which formulae D-1 and D-5 may serve as examples:

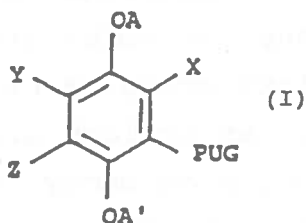


wherein R_8 is a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group, whereas the meanings of Z_1 , Z_2 and Z_4 need not be considered in detail.

Claim 1 of the second auxiliary request reads as follows:

"A silver halide photographic material containing at least one compound having a group which after being released from the compound by redox reaction is converted into a compound having a development restraining ability and which is further converted in the developing solution into a compound which has no

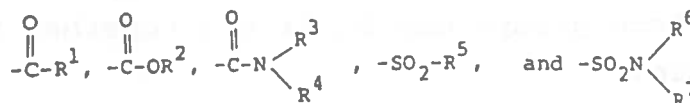
substantial development restraining ability or which shows a marked decrease in such ability wherein said compound is represented by the general formula (I):



wherein

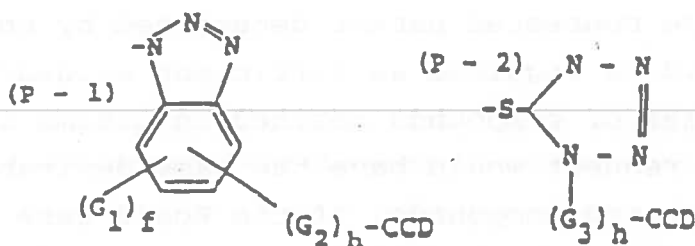
A and A' are each hydrogen or a group which can be hydrolysed by alkali;

X, Y and Z are each hydrogen, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group or an alkylthio group, X may additionally be an electron-withdrawing group selected from



wherein R¹ to R⁷ are each a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group; or Y and Z may form a 5- or 6-membered ring through a methylene chain;

PUG is a group released by reaction with a light-exposed silver halide and/or the oxidized product of the developing agent, and is bonded to the benzene nucleus via a sulphur atom or a nitrogen atom, wherein said PUG is selected from the group consisting of P-1 and P-2:



wherein

G₁ is hydrogen, a halogen atom, an alkyl group, an acylamino group, an alkoxy group, a sulfonamido group, an aryl group, an alkylthio group, an alkylamino group, an anilino group, an amino group, an alkoxycarbonyl group, an acyloxy group, a nitro group, a cyano group, a sulfonyl group, an aryloxy group, a hydroxy group, a thioamido group, a carbamoyl group, a sulfamoyl group, a carboxyl group, a ureido group or an aryloxycarbonyl group;

G₂ is any one of the substituents listed for G₁ which may form a divalent group;

G₃ is a substituted or unsubstituted alkylene group or a substituted or unsubstituted arylene group and may be interrupted by an ether, ester, thioether, amido, ureido, imido, sulfon or sulfonamido bond or a carbonyl group, wherein said bonding groups and alkylene and arylene groups may be linked together to form a divalent group;

CCD is -COOR₈,

wherein R₈ is a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group."

The Appellant expanded on his written grounds of appeal and submitted, in addition, that it was common practice in the field of chemistry to establish the properties of a class of chemical compounds by testing only a small number of representative compounds. Therefore, so he argued, the properties of the seven compounds according to the contested patent determined by the test report should be regarded as sufficient evidence that all classes of compounds defined in Claims 1 and 2 of the main request would have the same desirable properties as the tested compounds. If the Board were unable to accept this line of argument it should consider the test report as sufficient evidence for the properties of the more

limited number of compounds according to Claim 1 of the first or second auxiliary request, respectively.

- VII. The Appellant requested that the decision under appeal be set aside and the patent maintained on the basis of Claims 1 to 5 as submitted together with the Statement of Grounds of Appeal (main request) or on the basis of Claims 1 to 3 submitted during oral proceedings as first and second auxiliary request, respectively.

The Respondent requested that the appeal be dismissed.

At the end of the oral proceedings the decision was announced that the patent would be maintained with the set of claims submitted as second auxiliary request.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request*
 - 2.1 There is no objection to the present set of claims under Article 123 (2) and (3) EPC, since these claims correspond to Claims 1 + 4, 1 + 6, 2, 3 and 5 as filed and granted, respectively, with correction of an obvious error in the definition of A and A' in Claim 1.
 - 2.2 The Board observes that the present amended Claims 1 and 2 may be objectionable under Article 84 EPC, e. g. because they do not contain a definition of the abbreviation "PUG". However, since the Board is unable to allow this request for another reason, it did not deem it necessary to decide this question.

2.3 Novelty is not in dispute. The Board is satisfied that in the decision under appeal it was correctly held that the claimed subject-matter was novel.

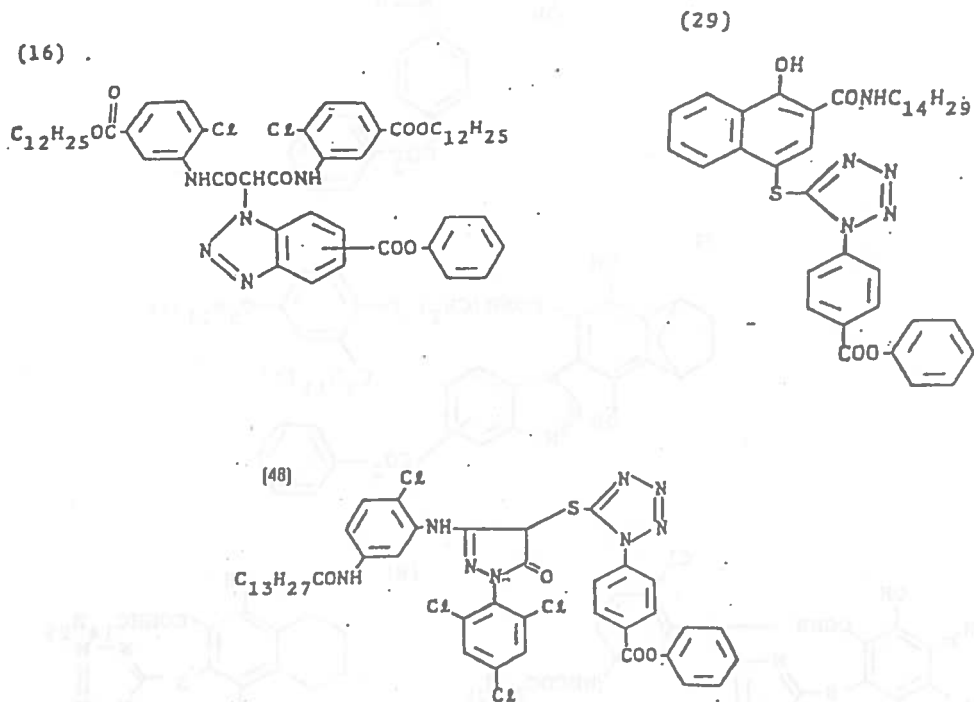
2.4 Inventive step

2.4.1 Technical problem

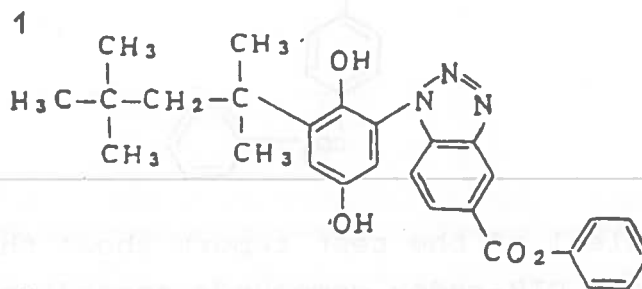
In the description of the contested patent it is stated that DIR-hydroquinones are known compounds which are used for improving the tone of photographic images, their graininess and sharpness as well as the colour reproducibility (see page 2, lines 1 to 14). It is further stated that these known compounds have the disadvantage that the development solutions used for developing photographic elements containing the above-mentioned compounds become contaminated by increasing amounts of the development inhibitors released from the said compounds. This impairs the quality of the images, if in a commercial process a large number of images is developed in the same development solution. It can therefore be derived from the patent specification that the technical problem which the contested patent sets out to solve is to avoid this accumulation of development inhibitors.

According to the Appellant, a further technical problem addressed by the contested patent should be seen in providing photographic elements which are suitable for obtaining images of better sharpness, graininess and colour reproducibility than images obtained from photographic elements containing the DIR-couplers disclosed in document (5). In support of this, the Appellant relied on a test report submitted as Attachments A and B to the Statement of Grounds of Appeal. In Attachment A, which was refiled in an improved version on 15 February 1994, photographic

elements were produced according to Sample 101 of document (5), wherein inter alia couplers No. (16), (29) and (48) were employed in amounts necessary to obtain always the same gradation. These couplers have the following chemical structures:



In the same way samples were prepared in which the above couplers were replaced by DIR hydroquinones according to the contested patent, namely the compounds numbers (1), (58) and (72) disclosed in the description and compounds (A) to (D) falling under the general formula of Claims 1 to 5. These compounds are represented by the following structural formulas:



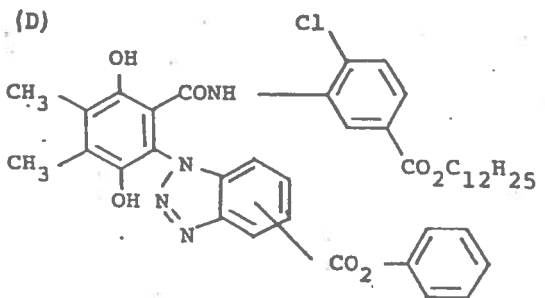
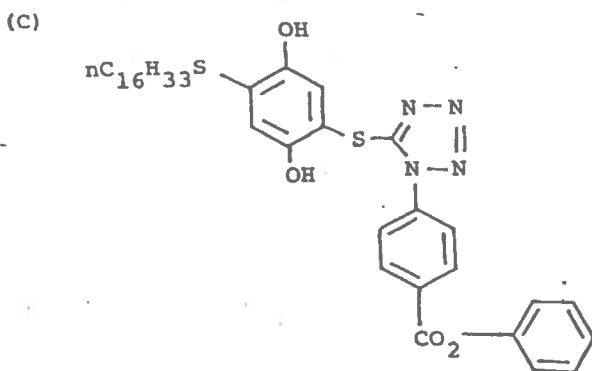
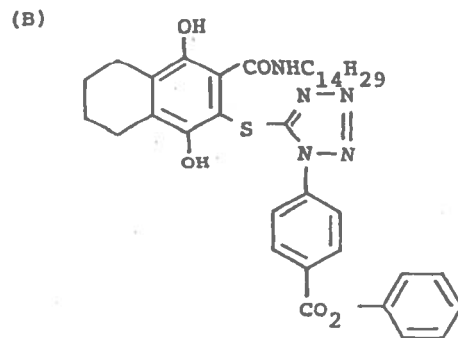
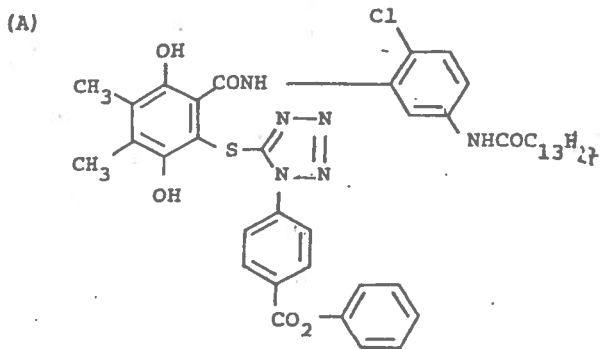
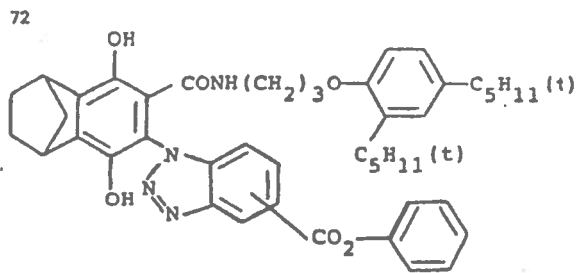
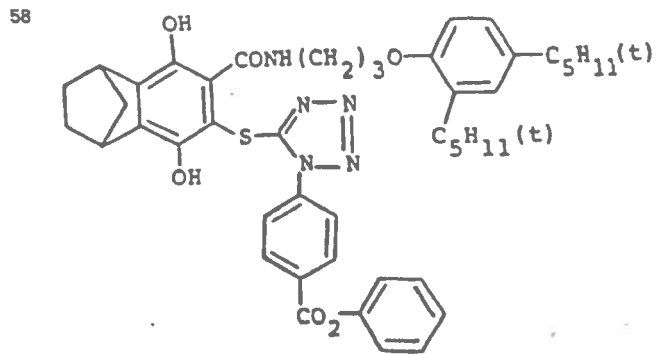


Table 1 of the test report shows that the use of the above DIR-redox compounds according to the patent in dispute instead of the indicated DIR-couplers according to document (5) results in an improvement of the image

sharpness (measured by the MTF-value) and the colour turbidity. Table 2 of the test report shows that the improvement of the MTF-value is also obtained if the photographic elements are subjected to a colour reversal processing. Thus the Board can accept that the six tested compounds are indeed suitable for making photographic elements with better image sharpness than that obtained by using the DIR-couplers disclosed in document (5).

However, from document (3) it can be inferred that the effects of a DIR-compound on the image quality of a photographic element cannot be predicted from the mere knowledge of its chemical structure, because it is the result of a complex interaction between the velocity of the cleavage reaction generating the development inhibitor, the activity of the inhibitor and its diffusibility in the light-sensitive layer (see page 6, line 13 to page 7, line 2 of the description). The Appellant himself had relied on this statement and had argued that for this reason the suitability of the DIR-groups disclosed in document (5) for modifying the DIR-redox compounds of the contested patent could not be expected. On that basis, the Board is unable to accept that all compounds comprised by the present Claims 1 to 5 would have the same useful properties as the tested examples. In particular, the optional presence of the group $\langle \text{time} \rangle$ proves that the present claims comprise compounds having quite different cleavage velocities. Since this property is one of the decisive factors for obtaining the desired improvement mentioned in document (3) and relied upon by the Appellant, it is, in the Board's judgment, quite clear that the above-mentioned tested compounds according to the present claims are not sufficiently representative for the whole class of compounds defined by these claims.

Thus, while it is true that the testing of even one single compound may sometimes be sufficient to support the assumption that a broadly defined class of chemical compounds having a similar chemical structure will most probably have substantially the same properties, the Board cannot accept the Appellant's submission that such a prima facie assumption is generally applicable. On the contrary, the applicability of such an assumption must in each particular case be judged on the basis of the available facts. In the present case, the Appellant has expressly submitted that a person skilled in the art would be unable to predict, on the basis of the knowledge of the state of the art, including the relevant common general knowledge, the relevant technically useful properties of the class of chemical compounds in question from the sole knowledge of their chemical structure. He has, however, failed to show that any additional rules existed for assessing the relation between chemical structure and the desired technical properties, not yet belonging to the state of the art, which might have been discovered and which might have enabled him to make the necessary predictions. In this situation, it is in the Board's judgment not justified to assume that the few tested compounds are representative for the broad class of compounds defined by the present claims.

For this reason, the Board cannot base its assessment of the inventive step involved in providing the photographic elements of the present claims on the assumption that the **twofold** technical problem submitted by the Appellant has in fact been solved. The technical problem which has been effectively solved by the claimed photographic elements can, however, be seen in providing such photographic elements which, upon development, do not give rise to an undesirable accumulation of development inhibitors in the developing solution, since

it has been accepted by both parties throughout the opposition and appeal proceedings that the present claims contain a "functional" limitation to photographic elements which solve this problem.

- 2.4.2 The proposed solution of this technical problem is to use the photographic elements of Claims 1 to 5, which comprise DIR-hydroquinones capable of releasing development inhibitors which are further converted in the developing solution into a compound which has no substantial development restraining ability or which shows a marked decrease in such ability.
- 2.4.3 As already mentioned above, it is acknowledged in the specification of the contested patent that DIR-hydroquinones and their normal functions in photographic elements belong to the state of the art. Such DIR-hydroquinones are disclosed in documents (1) to (4). In documents (1) to (3) the development inhibiting group is bound to the hydroquinone ring through a sulphur atom and may be N-aryl-5-tetrazolyl (see, document (1), Claim 1); 5-tetrazolyl, 2-benzoxazolyl, 2-benzothiazolyl, 2-oxadiazolyl, or 2-thiadiazolyl (see document (2), Claim 11); or a heteroaromatic group, such as tetrazolyl, e.g. 1-phenyltetrazolyl or 1-alkoxyphenyltetrazolyl, triazolyl, e.g. 1-phenyl- or 3-n-amy-1,2,4-triazolyl, thiadiazolyl, e.g. 5-methyl-thiadiazolyl or 5-propyl-thiadiazolyl, oxazolyl, e.g. 4-methyl-oxazolyl, benzoxazolyl, β -naphthoxazolyl, oxadiazolyl, thiazolyl or pyrimidyl (see document (3), Claim 2 and page 14, line 22 to page 15, line 2 of the description). Document (4) discloses DIR-hydroquinones in which the development inhibiting group is an optionally substituted indazole residue which is bound to the hydroquinone ring through a nitrogen atom (see Claim 1).

In document (5) the problem of contamination of the development solution by accumulated development inhibitors is addressed. According to this document, however, the contamination problem arises from development inhibitors released not from DIR-**hydroquinones** but from DIR-**couplers**. It is not disputed by the Appellant that some of the inhibitors released from conventional DIR-couplers, such as those described in document (5), page 3 with reference to several patent documents, belong to the classes of inhibitors mentioned in documents (1) to (4) as being useful development inhibitors released from DIR-hydroquinones. Nor is it disputed by the Appellant that document (5) proposes to solve the accumulation problem arising from the use of DIR-couplers capable of releasing such conventional development inhibitors by replacing the conventional inhibitor groups by modified groups corresponding to the "functional" definition of the group PUG according to the present Claims 1 to 4 and the groups AF-CCD as proposed in the present Claim 5 (see document (5), claims 8, 18, 19, 20).

- 2.4.4 In documents (2) to (4) the nature of the development inhibitor moiety is defined in broad terms which include the more specific definitions given in document (5). In particular, according to Claim 2 of document (3), this moiety may be any heterocyclic residue bound to the hydroquinone ring through a sulphur atom, regardless of the substituents it may carry. Therefore, the statement in document (3) referred to above (see point 2.4.2) may not be regarded as relating to the principal function of the DIR-hydroquinones in photographic elements but concerns only more specific additional questions, such as whether the development inhibiting effect takes place in the layer containing the DIR-compound or in an adjacent layer. This statement would therefore not have deterred the skilled person from considering the

development inhibitor moieties disclosed in document (5) when looking for a solution of the present similar technical problem. In the Board's judgment, it was thus obvious to try using the inhibitor moieties proposed in document (5) for modifying the DIR hydroquinones described in documents (1) to (4) with a view to solving the accumulation problem arising from the use of the said DIR hydroquinones.

In addition, and having regard to the Respondent's written submission, the Board observes that even if the Board had accepted, in the Appellant's favour, that the improvement of sharpness had indeed been achieved by **all** compounds of the present Claim 1, then the subject-matter of this claim would still have remained obvious, since its subject-matter comprises **all** development inhibitor moieties made available by document (5) for the purpose of solving the accumulation problem. Consequently, the additional effect, if present, would be no more than an automatic and inevitable result of the solution of the accumulation problem according to the combined information derivable from documents (1) to (5), as set out above. In these circumstances, i. e. in the absence of any real choice, the solution of such a further problem may not have rendered the above subject-matter non-obvious (see T 192/82; OJ EPO 1984, 415).

2.5 For these reasons, the main request must fail.

3. *First auxiliary request*

3.1 Claim 1 of this request is based upon Claims 1, 4 and 5 as filed and granted; it is further limited by the deletion of some of the alternatives envisaged by the above claims. Claims 2 and 3 correspond to Claims 3 and 4 as filed and granted. The requirements of Article 123 (2) and (3) are therefore met.

3.2 Since the subject-matter of that request is more limited than that of the main request being held novel (see point 2.3 above), novelty need not be reconsidered.

3.3 Inventive step

It is clear that the considerations of the relevant technical problem upon which the evaluation of the inventive step may be based are in principle the same for both the main and the first auxiliary request. Therefore, having regard to the facts considered in point 2.4.1 above, the basic question to be answered is whether or not it can be accepted that all photographic elements comprised by the present more limited claims have the same improved properties as the seven tested samples mentioned in point 2.4.1 above.

In this respect, the Board observes that all tested samples contain DIR-hydroquinones in which the development inhibitor is either of the type P-1, wherein V_1 is nitrogen, or of the type P-3 (for the respective structures see point VI above), and in which the group CCD is always of the type D-1. However, the Board cannot accept, on the basis of the criteria set out in document (3), the applicability of which was expressly confirmed by the Appellant, that the velocity of the cleavage of the C-N bond between P-1 and the hydroquinone ring on the one hand and the velocity of the cleavage of the C-N bond between P-2 and the hydroquinone ring on the other hand are comparable, since in P-2 the benzene ring is not aromatic, so that the electron distribution around the respective nitrogen atoms (and therefore their electronegativity) is quite different. In the absence of further explanations or experimental evidence it is thus not immediately apparent why the photographically useful properties of a

compound containing P-1 and of a compound containing P-2 should be comparable.

Similar considerations apply to the variety of the 16 different partial structures representing the group CCD. In particular, group D-5 is a strongly polar ionic group. As already mentioned in point 2.4.1 above, the diffusibility of the DIR-hydroquinone is said in document (3) to be a further important factor influencing the photographically useful properties of DIR-hydroquinones, and it cannot normally be expected that compounds of different polarities such as those containing the group D-1 on the one hand and those containing the group D-5 on the other hand are comparable in this respect.

In addition, the Board observes that just any electron withdrawing group may be present in the hydroquinone ring, and that there is no evidence that the nature of this group is without influence on the relevant properties of the DIR-hydroquinones containing it.

For all these reasons, the Board cannot accept that on the basis of the improved performance of the tested photographic elements it can fairly be assumed that substantially all photographic elements comprised by the present claims will show similar improved performance.

Therefore, substantially the same considerations regarding the technical problem and the obviousness of the proposed solution apply to the subject-matter of both the main and the first auxiliary request. Accordingly, this request must also fail.

4. *Second auxiliary request*
- 4.1 Claim 1 of this request is further limited by the deletion of two of the four basic structures of the residue PUG comprised by Claim 1 of the first auxiliary request; by deleting all of the sixteen possible meanings of CCD other than D-1; by defining the electron withdrawing group as in the description as filed, page 5, first complete paragraph (corresponding to the contested patent as granted, page 3, lines 1 to 11); and by excluding the possibility that the substituents Y and Z may mean such an electron withdrawing group, a possibility which is not supported by any more detailed information in the description (which, in particular, does not mention one single compound wherein one of these substituents is an electron withdrawing group). In the Board's judgment, the combination of all these limitations does not create a new class of compounds which the skilled person would not have recognised in the application documents as filed, since more than 40 out of 100 DIR-redox compounds specifically mentioned in the application as filed as well as in the specification of the contested patent meet these limited definitions. Claims 2 and 3 still correspond to Claims 3 and 4 as filed and granted. The requirements of Article 123 (2) and (3) are therefore met.
- 4.2 Regarding patentability, the only remaining question is whether the subject-matter of Claim 1 according to this request meets the requirement of Article 56 EPC.
- 4.3 As already set out in respect of the first auxiliary request, the answer to this question can only be positive if it can be accepted that substantially all photographic elements according to the second auxiliary request would solve the additional technical problem relied upon by the Appellant, namely to be capable of

producing photographic images having improved sharpness and reduced colour turbidity.

- 4.3.1 In the Board's judgment, the structural variations among the seven DIR-hydroquinones contained in the tested photographic elements according to the contested patent (see point 2.4.1 above) show that the statement in document (3), according to which the effect of structural modifications in DIR-hydroquinones on the quality of photographic images obtained from photographic elements containing them is in principle unpredictable, is not strictly applicable in the present case. Therefore, the Board can accept the Appellant's submission that it is not justified to limit the subject-matter of the contested patent to photographic elements containing only those particular DIR-hydroquinones which were tested. The Board considers that the tested DIR-hydroquinones may be structurally modified to such an extent that, on the basis of the common general knowledge, the structural modifications would most probably not strongly influence the physical and chemical properties which are relevant according to document (3), such as diffusibility or the velocity of the cleavage of the bond between the hydroquinone ring and the substituent PUG. In the Board's judgment, it can therefore be fairly expected that the replacement of the tested DIR-hydroquinones by such structurally similar ones would not result in a substantially different performance of the respective photographic elements. On that basis, and in the absence of any evidence to the contrary, the Board is satisfied that Claim 1 according to the second auxiliary request comprises only photographic elements which can fairly be expected to have similar performance as the tested ones, since it can be seen from the formulas reproduced in point 2.4.1 above that the tested DIR-hydroquinones contain all

essential structural elements of the DIR-hydroquinones according to the present Claim 1.

- 4.3.2 For these reasons the Board accepts that it is sufficiently established that substantially all photographic elements now claimed are suitable for obtaining photographic images of better sharpness and less colour turbidity than photographic elements containing instead an equivalent amount of a number of different DIR-couplers of the kind disclosed in document (5), for which the compounds Nos. (16), (29) and (48) reproduced in point 2.4.1 above may be regarded as being representative. Table 1 of Attachment A to the statement of grounds of appeal shows that the use of the DIR-hydroquinones according to the present Claim 1 results in an increase of the MTF-value of about 10%. Although the Respondent has submitted that such an increase would be within the limits of experimental error (without, however, providing supporting facts or evidence), the Board accepts it as significant, since the Respondent has failed to discharge his burden of proof to the contrary (see also T 219/83, OJ EPO 1986, 211, reasons No. 12).
- 4.3.3 The technical problem which is effectively solved by the subject-matter of the present Claim 1 can therefore, in accordance with the Appellant's submission, be seen in providing photographic elements which are suitable for obtaining photographic images of improved sharpness and which do not release, during processing, development inhibitors which accumulate in the developing solution.
- 4.3.4 The answer to the question of inventive step hinges therefore on the answer to the question whether the cited documents would have suggested to the skilled person to solve the above twofold problem by providing

photographic elements containing the specific DIR-hydroquinones defined in the present Claim 1.

4.3.5 The DIR-couplers according to document (5) used for comparison in the above Attachment A release the same development inhibitors as the tested DIR-hydroquinones, the structures of which are also reproduced in point 2.4.1 above. According to the Respondent's submission, a skilled person would therefore have expected that the influence on the image sharpness (measured by the MTF-value) of all tested DIR-compounds, regardless of whether or not the development inhibitor is released from a coupler or from a redox compound, would be substantially the same, provided that these compounds would all be employed in amounts resulting in the same gradation. However, contrary to that expectation, an improvement of the image sharpness has been achieved by the DIR-hydroquinones defined in the present Claim 1. Therefore, it is clear that document (5) could not suggest the solution of the above-defined technical problem.

4.3.6 Likewise, having regard to the Respondent's submission mentioned in the preceding paragraph, documents (1) to (4), the relevant content of which is summarised in point 2.4.3 above, could not suggest the proposed way for improving the image sharpness achieved by the subject-matter claimed in the contested patent, when considered in combination with the disclosure of document (5).

4.3.7 In addition, the Board, on its own motion, has considered the question whether an objective evaluation of the inventive step should rather start from one of documents (1) to (4) than, as submitted by the Appellant, from document (5). It is true that it is well known that DIR-couplers and DIR-hydroquinones may have

different functions in photographic elements. This fact, which was not disputed by the Appellant during the oral proceedings, may be illustrated by the Respondent's submission that the positive effect on the colour turbidity and the improvement of image sharpness obtained in the colour reversal processing of the photographic elements tested according to Attachment B mentioned in point 2.4.1 above is not surprising in view of such well known different functions of DIR-couplers and DIR-hydroquinones. Thus, it may be more appropriate to compare compounds of the same type rather than couplers and redox compounds. However, in the present case the Board reached the conclusion that the technical problem to be formulated starting from any one of documents (1) to (4) would have been substantially the same as that formulated starting from document (5) and that, therefore, its solution according to the present claims would have been non-obvious in the light of the combined teachings of documents (1) to (5) for substantially the same reasons as set out above. There was thus no need to deviate from the line of argument developed by the Appellant.

4.3.8 Finally, it remains to be considered whether the Respondent's basic objection, namely that the skilled person would have provided the photographic elements of the present Claim 1 in any case, as the only reasonable solution of the partial problem of preventing the developing solution from being contaminated by the released development inhibitors, and that therefore the presence of additional useful properties of the said photographic elements was irrelevant, would still apply to the present limited subject-matter. In this respect, the Board considers that, although at least 1-phenyl-5-mercapto-tetrazole is one of the most widely used development inhibitors, it nevertheless follows from documents (1) to (5) that a great number of

straightforward alternatives were available as equally suitable solutions of the above-mentioned partial problem, so that it cannot be inferred from the available documents that a skilled person, when trying to solve the said partial problem, would necessarily have arrived at a photographic element according to the present claims. Thus, the Board holds that the subject-matter of the present limited claims is no longer open to this objection.

4.3.9 For these reasons, the subject-matter of the present Claim 1 as well as that of Claims 2 and 3, which concern preferred embodiments of that subject-matter, meets the requirement of Article 56 EPC. Thus, the contested patent can be maintained with these claims.

5. The adaptation of the description to the present claims requires, *inter alia*, the deletion of a great number of examples. Therefore, the Board has decided not to invite the Appellant to produce such a revised description during the oral proceedings, but to leave the necessary adaptation to proceedings before the Opposition Division.

6. Notwithstanding the fact that the Respondent has not been represented at oral proceedings before the Board, the decision to maintain the contested patent with Claims 1 to 3 according to the second auxiliary request and a description to be adapted accordingly could nevertheless be given orally in accordance with Rule 68 (1) EPC for the following reasons:

6.1 As already explained in detail in point 4.1 above, Claim 1 of the second auxiliary request corresponds in essence to a combination of the features of Claims 1 and 5 of the main request with the further limitation to specific embodiments encompassed by these combined

claims. When assessing the content of Claim 1 of the main request, a skilled person would inevitably have to use the statement on page 3, lines 1 to 11 of the description of the contested patent in order to interpret the term "electron withdrawing group" contained in this claim. Claims 2 and 3 of the second auxiliary request correspond to Claims 3 and 4 of the main request. It follows that the insertion of this statement, as a definition of said term, in the text of Claim 1 of the second auxiliary request does not give rise to the claiming of new subject-matter in comparison with Claim 1 of the main request. Thus, from the above it is clear that, during oral proceedings before the Board, no relevant facts were put forward for the first time. Similarly, no new evidence had to be considered by the Board. Consequently, the fact that the decision was given orally is not at variance with opinion G 4/92 of the Enlarged Board of Appeal (OJ EP0 1994, 149).

- 6.2 Given the fact that the contested patent is maintained on the basis of the Appellant's second auxiliary request, i.e. with an amended text emanating from and approved by the Appellant, Rule 58 (4) EPC does not need to be applied (cf. decision G 1/88 of the Enlarged Board of Appeal; OJ EP0 1989, 189; points 5.2.2 and 6 of the Reasons). The Respondent would have had sufficient opportunity of commenting, in accordance with Article 113 (1) EPC, on the new text during oral proceedings before the Board. In the absence of any new facts or evidence dealt with during these proceedings (cf. point 6.1 supra), the Board considers the Respondent's deliberate decision to refrain from being represented at oral proceedings before the Board as being tantamount to a tacit abandoning of his right to present comments pursuant to Rule 58 (4) EPC. Thus, the application of Rule 58 (4) EPC could be dispensed with.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the European patent with Claims 1 to 3 according to the second auxiliary request and a description to be adapted accordingly.

The Registrar:

The Chairman:

P. Martorana

F. Antony

