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D E C I S I O N
of 29 March 2004

Case Number: T 1053/01 - 3.3.6

Application Number: 92116262.4

Publication Number: 0534395

IPC: G03C 1/005

Language of the proceedings: EN

Title of invention:
High tabularity high chloride emulsions of exceptional stability

Patentee:
EASTMAN KODAK COMPANY

Opponent:
Fuji Photo Film Co., Ltd.

Headword:
Tabular grains/Eastman Kodak Company

Relevant legal provisions:
EPC Art. 83

Keyword:
"Sufficiency of disclosure (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1053/01 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 29 March 2004

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 21 August 2001 revoking European patent No. 0534395 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Krasa
Members: G. N. C. Raths
U. J. Tronser

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division to revoke European patent 0 534 395 relating to high tabularity high chloride emulsion of exceptional stability.

II. The patent contained a set of 17 claims of which the independent claims 1 and 10 read as follows:

"1. A radiation sensitive emulsion containing a silver halide grain population comprised of at least 50 mole percent chloride, based on total silver forming the grain population projected area, in which greater than 50 percent of the grain population projected area is accounted for by tabular grains having a mean thickness of less than 0.3 μm, and wherein the tabular grains have parallel major faces lying in {100} crystallographic planes."

"10. A process of preparing silver halide emulsions containing tabular grains bounded by {100} major faces of which the tabular grains bounded by {100} major faces a portion accounting for 50 percent of total grain projected area selected on the criteria of adjacent major face edge ratios of less than 10 and thicknesses of less than 0.3 μm and having higher aspect ratios than any remaining tabular grains satisfying these criteria (1) have an average aspect ratio of greater than 8 and (2) internally at their nucleation site contain iodide and at least 50 mole percent chloride, comprised of the steps of

(1) introducing silver and halide salts into a dispersing medium so that nucleation of the tabular grains occurs in the presence of iodide with chloride accounting for at least 50 mole percent of the halide present in the dispersing medium and the pCl of the dispersing medium being maintained in the range of from 0.5 to 3.5 and

(2) following nucleation completing grain growth under conditions that maintain the {100} major faces of the tabular grains."

III. In the notice of opposition based on lack of novelty and inventive step (Articles 100(a), 54, 56 EPC), the following documents were cited, *inter alia*:

(1) US-A-4 946 772 and

(3) US-A-4 063 951.

During the opposition procedure the opponent, now the respondent, raised a further objection under Article 100(c) EPC.

IV. In its decision the Opposition Division held that the patent in suit did not sufficiently disclose (1) the definition of tabular silver halide grains present in the emulsion and (2) the method used to determine the percentage of grain population projected area accounted for by tabular grains. Therefore, the invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).

V. The proprietor, now the appellant, lodged an appeal against this decision; its arguments are summarized as follows:

- the term "tabular" in "tabular silver halide grains" is defined in the specification and has a well accepted meaning in the photographic art;

- regardless of what calibration method might be used for measuring the grains of an emulsion sample, a skilled person is able to identify an emulsion satisfying the requirements of the claims of the patent in suit;

- therefore, the patent in suit complied with the requirements of Article 83 EPC.

VI. The respondent refuted the arguments of the appellant as follows:

- there is no definition of the term "tabular" generally accepted in the art;

- there is no standard method of measuring the projected area formed by the grain population in the emulsion;

- therefore, the claimed invention was not sufficiently disclosed to be carried out by a person skilled in the art.

VII. During the oral proceedings, which took place on 29 March 2004, the appellant requested that the

decision under appeal be set aside and that the patent be maintained in amended form on the basis of
claims 1 to 16 according to the main request, or
claims 1 to 16 according to the first auxiliary request, or
claims 1 to 7 according to the second auxiliary request,
all requests having been submitted at the oral proceedings before the Board, or, *auxiliarily*, that the case may be remitted to the first instance with the order to continue opposition proceedings on the basis of the claims of any of these requests.

VIII. The respondent requested that the appeal be dismissed.

IX. At the end of the oral proceedings the Chairman announced the decision of the Board.

Reasons for the Decision

1. *Article 123 EPC*

1.1 Main request

Claim 1 of the main request, consisting of 16 claims, differs from Claim 1 as originally filed in that "30 percent of the grain population" is replaced by "50 percent of the grain population", and that the term "characterized in that" is replaced by "and wherein".

The words "50 percent of the grain population" find their basis in the population as originally filed (page 15, lines 7 to 8).

Claim 10 has been redrafted by referring to claim 4 instead of repeating the wording of Claim 4.
Claim 14 as originally filed has been deleted and Claims 15 to 17 as originally filed have been renumbered claims 14 to 16.

1.2 Auxiliary request 1

Claim 1 of auxiliary request 1, consisting of 16 claims, differs from Claim 1 of the main request in that the passage "further characterized in that of the tabular grains bounded by {100} major faces, a portion accounting for 50 percent of total grain projected area selected on the criteria of adjacent major face edge ratios of less than 10 and thickness of less than 0,3 μm and having higher aspect ratios than any remaining tabular grains satisfying these criteria have an average aspect ratio of greater than 8" is added at the end of Claim 1. This passage finds its support in the description as originally disclosed (page 10, lines 14 to 21).

1.3 Auxiliary request 2

Auxiliary request 2, consisting of 7 claims, differs from auxiliary request 1 in that Claims 1 to 9 have been deleted, and Claims 10 to 16 have been renumbered Claims 1 to 7. Claim 4 of auxiliary request 1 has been incorporated into Claim 1 of auxiliary request 2.

1.4 The Board is satisfied that the claims of all the three requests meet the requirements of Article 123(2) (3) EPC.

2. *Article 83 EPC*

2.1 Tabular grain and measuring method

2.1.1 According to Article 83 EPC the patent application must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2.1.2 Claim 1 of the main request requires that tabular grains have a mean thickness of less than 0.3 μm and have parallel major faces lying in {100} crystallographic planes.

2.1.3 The respondent contests that the term "tabular" has been sufficiently defined in the patent in suit and that there is a standard method of measuring the projected area formed by the grain population in the emulsion.

It concluded that, therefore, the patent in suit did not comply with the requirements of Article 83 EPC.

2.1.4 The Board does not agree.

(a) As far as the definition of tabular silver halide grains is concerned the patent in suit addresses the art accepted characteristics as follows:

"Although varied definitions have been adopted in defining tabular grain emulsions, there is a general consensus that the functionally significant distinguishing feature of tabular grains lies in the large disparity between tabular

grain equivalent circular diameter (ECD, the diameter of a circle having an area equal to the projected area of the tabular grain) and tabular grain thickness (t, the dimension of the tabular grain normal to its opposed parallel major faces). Average tabular grain aspect ratio (ECD/t) and tabularity (ECD/t^2, where ECD and t are each measured in µm) are art accepted quantifiers of this disparity." (page 2 line 19 to 24).

Therefore it is clear that the "tabular grains" of Claim 1 are silver halide grains displaying a large disparity between ECD and t and the issue of sufficiency of disclosure boils down to the question whether or not the patent in suit contains all the information required by a person skilled in the art to produce the claimed radiation sensitive emulsion containing the specified population of such tabular grains.

(b) The Opposition Division correctly stated in its decision that neither a minimum value for the average tabular grain aspect ratio nor for the tabularity was given in the patent in suit. It further found that the information on the calibration method used to determine the percentage grain population projected area was insufficient. For these reasons, the Opposition Division concluded that the patent in suit did not disclose the claimed invention in a manner enabling a skilled person to carry out the invention without an undue amount of experimentation (see the reasons of the appealed decision, points 2.1 a1-1 to 2.1 a1-3).

(c) The Board cannot accept this conclusion.

(i) As already indicated, the patent in suit discloses that "tabular grains" show a large disparity between ECD and t. This characterization of tabular grains was not created for the first time in the patent in suit but can be found, although with different words, in citations (1) and (3), both not originating from the appellant:

"Tabular grains are formed with a planar spread in two dimensions with respect to the thickness of the grains..." (document (1), column 1, lines 31 to 33)

and

"These crystals are of tabular habit bounded by (l00) cubic faces and which have an aspect ratio of from 1.5:1 to 7:1." (document (3), column 1, lines 19 to 21).

Document (1) contains a further significant information:

"Emulsions containing tabular halide silver crystal grains of which the aspect ratio defined as the ratio of the edge length to the thickness of the grain is from 1.5:1 to 7:1 and which are bounded by (100) planes, and a method for the preparation of these emulsions has been disclosed in US Patent

No. 4,063,951...." " ...it is clear from the title and the published photographs that the grains which are formed in practice are really tabular grains and certainly not rod-like or needle-like grains." (column 2, lines 10 to 22). It is noted that document (1) is assigned to the respondent.

All these passages do not only demonstrate that those skilled in the art had no difficulty to understand the meaning of "tabular grains" but also that the latter could be identified by visual inspection.

(ii) The missing of a lower limit of the average tabular grain aspect ratio and of the tabularity cannot change this finding of the Board. It rather raises an issue of clarity insofar as the degree of tabularity may not be clear and may require interpretation or, in the words of the patent in suit, the large disparity between ECD and t may require appropriate construction. However any possible lack of clarity in this connection does not result from an amendment of the claims, and thus, cannot be an issue in these appeal proceedings.

(d) The patent in suit also teaches how to differentiate between tabular and non tabular grain emulsions.

"To distinguish tabular grain emulsions from those that contain only incidental tabular

grain inclusions it is also the recognized practice of the art to require that a significant percentage (e.g., greater than 30 percent and more typically greater than 50 percent) of total grain projected area be accounted for by tabular grains."
(page 2, lines 24 to 27).

(e) In respect of the method of measuring the projected area formed by the grain population in the emulsion, the patent in suit discloses in detail how in an appropriate photomicrograph of carbon grain replicas of a representative emulsion of the invention the projected area is to be evaluated (page 4, lines 39 to 55).

Then the patent in suit points to the necessity of a grain-by-grain examination of the photomicrograph to establish the percentage of the total grain projected area accounted for by the tabular grains (page 4, line 56 to page 5, line 18).

Figures 1 to 5 of the patent in suit illustrate this evaluation method.

(f) It follows from the above that neither the feature "tabular grain" nor the feature "greater than 50 percent of the grain population projected area" can result in a convincing objection of insufficient disclosure.

(g) The assessment of structures of silver halide crystals by evaluating electron micrographs was

common practice in the art. This is shown by documents (1) and (3).

Figures 1 to 37 and 39 to 48 of document (1) are electron micrographs which show the structures of silver halide crystals in the emulsions of that invention or comparative emulsions. When filing the opposition, the respondent had evaluated itself figures 15 and 16 of document (1). Taking into account that this citation is silent on how to evaluate the electron micrographs, the Board concludes that a skilled person had no difficulty to avail itself of an appropriate evaluation method. This conclusion is confirmed by document (3) stating that the aspect ratios of the crystals are determined from electron micrographs (column 1, lines 27 to 28) without giving further details which was obviously deemed to be unnecessary.

2.2 Preparation of the claimed radiation sensitive emulsion

2.2.1 The patent in suit discloses also the formation of the tabular grains on page 2, lines 41 to 49. It contains 14 examples. There is no evidence on file that any of the examples could not be reproduced.

2.3 Conclusion

For these reasons the Board concludes that the skilled person was able to put the invention into practice and to evaluate the obtained products and that the patent in suit fulfils the requirements of Article 83 EPC.

Since, however, the Opposition Division has not yet decided on novelty and on inventive step, the Board exercises its discretion under Article 111(1) and remits the case to the first instance for further prosecution.

Under these circumstances it is not necessary to deal with appellant's first and second auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to continue opposition proceedings on the basis of the claims of the main request submitted at the oral proceedings.

The Registrar: The Chairman:

G. Rauh P. Krasa