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Datasheet for the decision of 30 January 2013

Case Number: T 2086/11 - 3.3.06

Application Number: 07117233.2

Publication Number: 1878771

IPC: C09C 1/64, B22F 9/04

Language of the proceedings: EN

Title of invention:
Method of manufacturing aluminum flake pigment, aluminum flake pigment obtained by the manufacturing method and grinding media employed for the manufacturing method

Applicant:
TOYO ALUMINIUM KABUSHIKI KAISHA

Headword:
Mean aspect ratio/TOYO ALUMINIUM

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Clarity (no): the parameter "mean aspect ratio", measured as explained in the description, does not enable to distinguish which subject-matter is covered by the claims and which is not"

Decisions cited:
T 0728/98

Catchword:
-

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Case Number: T 2086/11 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 30 January 2013

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 26 April 2011 refusing European patent application No. 07117233.2 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: P. Ammendola
Members: L. Li Voti
U. Tronser

Summary of Facts and Submissions

I. This appeal lies from the decision of the Examining Division to refuse European patent application no. 07 117 233.2, relating to an aluminium flake pigment.

II. As regards the then pending sets of claims the Examining Division found *inter alia* that the parameter "mean aspect ratio", contained in claim 1, was unclear.

Therefore, all requests did not fulfil the requirements of Article 84 EPC.

III. An appeal was filed against this decision by the Applicant (Appellant).

Following the Board's communication of 10 August 2012 and the annex to the summons to oral proceedings, wherein the Board raised provisionally objections against the clarity and novelty of the then pending requests, the Appellant submitted a new main request and a first auxiliary request.

The single claim 1 according to the main request reads as follows:

"1. An aluminum flake pigment characterized in that the mean particle size of aluminum flake particles contained in said aluminum flake pigment is in the range of 3 to 20 μm and among the aluminum flake particles contained in said aluminum flake pigment, the aluminum flake particles having major axes (D) of not more than 10 μm have a mean aspect ratio in the range

of 8 to 20, calculated from individual aspect ratios (D/thickness of each particle) of at least 50 aluminum flake particles having major axes (D) of not more than 10 µm."

Claim 1 according to the first auxiliary request differs from claim 1 according to the main request insofar as it specifies that the mean particle size of the aluminum flake particles is a D50 mean particle size measured by laser diffraction and that the individual axes and thickness of the at least 50 aluminum flake particles are measured with a digital HD microscope.

IV. With respect to the parameter "mean aspect ratio", the Appellant submitted during oral proceedings that an aluminium flake pigment having even a small amount of flake particles with a major axis of not more than 10 µm and a mean aspect ratio from 8 to 20 showed increased brightness and better circulation resistance during preparation of a paint film, as explained in paragraphs 39 and 40 of the application.
Therefore, an aluminium flake pigment having the required mean diameter (this being the real meaning of mean particle size in the claim) and containing at least 50 aluminium flake particles having a major axis of not more than 10 µm and the required mean aspect ratio would fall under the scope of the claims and would have improved characteristics.

The method of measurement to be used for determining the mean aspect ratio of 50 aluminium flake particles was described in paragraph 61 of the application.
Moreover, the measurement of the individual aspect

ratio of 50 different flake particles reduced the error possibly present in the method, as explained in paragraph 63 of the application. Therefore, the measured value of mean aspect ratio was significant.

Hence, the parameter "mean aspect ratio" was clear and enabled to understand which products were encompassed and which were excluded by the wording of claim 1.

V. The Appellant requests that the decision be set aside and that a patent be granted on the basis of the main request submitted with letter of 10 October 2012, or, in the alternative, on the basis of the first auxiliary request submitted with letter of 28 December 2012.

Reasons for the Decision

1. Main request

1.1 *Clarity*

1.1.1 It is established jurisprudence of the Boards of Appeal of the EPO that, in order to ensure legal certainty, a claim must clearly define the matter for which protection is sought in terms of the technical features of the invention; the clarity of the technical features contained in the claim thus serves the purpose of ensuring that the public is not left in any doubt as to which subject-matter is covered by a particular claim and which is not (see Case Law of the Boards of Appeal of the EPO, 6th edition, 2010, II.B.1.1.1, first two full paragraphs on page 253 as well as T 728/98, OJ 2001, 319, point 3.1 of the reasons).

1.1.2 The parameter "mean aspect ratio", contained in the wording of claim 1, represents, in the present case, the mean of the individual aspect ratios, defined as the ratio of the major axis to thickness, of 50 aluminium flake particles having major axes of not more than 10 µm. The method for measuring said mean aspect ratio is described in paragraphs 61 to 63 of the application.

According to this method of measurement a paint plate containing aluminium flake pigments, obtained as described in paragraphs 54 to 56, is cut into 1.5 cm square in order to prepare an observation sample. The aluminium flake particles are then observed in a section of the paint film of the sample by means of a digital HD microscope, the individual aspect ratios of 50 flake particles observed on the screen are measured and the mean of these 50 individual aspect ratios is calculated.

It is undisputed that the observed sample, which contains flake particles with a mean diameter of 3 to 20 µm, can contain thousands of aluminium flake particles having a major axis of not more than 10 µm. It is also undisputed that the measurement contains necessarily an error (as remarked in paragraph 63 of the application itself) since the flake particles are observed on a screen and the observation of the major axis and thickness of the two-dimensional image of the individual particles depends on their orientation in the observed plate; therefore, it is not possible for an operator to assess with certainty if the observed particle is really showing its major axis and thickness

or not. As explained by the Appellant and in the application (paragraph 63), the measurement has been repeated 50 times by taking 50 different particles in order to reduce the experimental error.

However, since the investigated sample contains thousands of particles having a major axis of not more than 10 µm and the method described in the application does not give any precise indication upon how to select such 50 particles, one operator, by selecting at random one group of 50 particles, would measure perhaps a mean aspect ratio according to claim 1 whilst another operator, by selecting for the same sample a different group of 50 particles, could find a value of mean aspect ratio outside the claim.

The Board remarks also that claim 1 requires a mean diameter for all aluminium flake particles of from 3 to 20 µm, i.e. that 50% of the particles are above the mean diameter and 50% below, but it does not contain any further requirement with regard to the homogeneity of the overall particle size distribution or of the particle thickness. Hence, an observed sample could contain, for example, 1000 particles with a size below 10 µm but with very different thickness.
Therefore, the average aspect ratio measured on a random selected group of only 50 particles, which would represent 2% of 1000 particles, cannot represent anyway a statistically significant indication of the real mean aspect ratio of the total group of particles contained in the tested flake pigment.

Therefore, the parameter chosen in claim 1 is by itself insufficient to characterize the claimed product in a

reliable way so that a skilled person would know if the product tested falls or not within the extent of the claim.

The Board thus concludes that the parameter "mean aspect ratio" is unclear and that claim 1 does not comply with the requirements of Article 84 EPC 1973.

2. Auxiliary request

2.1 *Clarity*

Claim 1 of the auxiliary request differs from claim 1 according to the main request only insofar as it specifies that the mean particle size of the aluminum flake particles is a D50 mean particle size measured by laser diffraction and that the individual axes and thickness of the at least 50 aluminum flake particles are measured with a digital HD microscope.

Therefore, these additional features specify only that the mean particle size is the mean diameter (D50) and the methods of measurement used in the application for measuring the mean diameter and the mean aspect ratio.

Since the method of measurement for determining the mean aspect ratio used in the application has been already considered in the discussion of clarity of claim 1 according to the main request, the additional feature that this parameter is measured by a digital HD microscope cannot have any influence on the conclusion reached with regard to the main request. Moreover, the features added with respect to the mean particle size specify only that it is the mean diameter (D50), fact

already considered with respect to the main request, and its method of measurement, which does not add any further limitation to the overall particle size distribution; therefore, also these features cannot modify the conclusion reached hereinbefore.

Therefore, the Board concludes that claim 1 according to the auxiliary request lacks clarity for the same reasons given in point 1.1.2 above.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano P. Ammendola