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Datasheet for the decision of 15 September 2020

Case Number: T 0260/17 - 3.3.06

Application Number: 09796366.4

Publication Number: 2379648

IPC: C09C1/02, C09C3/04, D21H17/00, C09C1/04, D21H17/69

Language of the proceedings: EN

Title of invention:
Process for manufacturing aqueous suspensions of mineral materials or dried mineral materials, the obtained products, as well as uses thereof

Patent Proprietor:
Omya International AG

Opponent:
Schaefer Kalk GmbH & Co. KG

Headword:
Aqueous mineral materials / OMYA INTERNATIONAL

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step (all requests) - (no) : improvement not shown over the closest prior art

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0260/17 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 15 September 2020

Appellant 1: (Patent Proprietor)	Omya International AG Baslerstrasse 42 4665 Oftringen (CH)
Representative:	Maiwald Patent- und Rechtsanwaltsgesellschaft mbH Elisenhof Elisenstraße 3 80335 München (DE)
Appellant 2: (Opponent)	Schaefer Kalk GmbH & Co. KG Louise-Seher-Strasse 6 65582 Diez (DE)
Representative:	Mai Dörr Besier European Patent Attorneys European Trademark Attorneys Patentanwälte Kreuzberger Ring 64 65205 Wiesbaden (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 16 November 2016 maintaining European Patent No. 2379648 in amended form.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	L. Li Voti
	J. Hoppe

Summary of Facts and Submissions

I. The appeals of the patent proprietor (appellant 1) and of the opponent (appellant 2) are against the decision of the Opposition Division to maintain European patent n° 2 379 648 in amended form on the basis of the first auxiliary request of 6 June 2016.

II. With its statement of grounds appellant 1 defended the patent on the basis of the main request dated 6 June 2016 and maintained the five auxiliary requests also dated 6 June 2016.

III. Appellant 2 raised inter alia an objection of lack of inventive step starting from document D1 (US 5,181,662 A) as the closest prior art.

IV. Following the board's preliminary opinion appellant 1 filed amended sets of claims with letter of 12 August 2020 as auxiliary requests 6 to 11.

V. During the oral proceedings held before the board inventive step was discussed starting from D1 as closest prior art.

VI. The final requests of the parties were the following:

Appellant 1 requested

that the contested decision be set aside and the patent be maintained in amended form based on the main request filed with letter of 6 June 2016,

or as an auxiliary measure,

that the opponent's appeal be dismissed, i.e. that the patent be maintained in amended form based on

the first auxiliary request filed with letter of 6 June 2016,

or as a further auxiliary measure

that the patent be maintained based on one of the second to fifth auxiliary requests filed with letter of 6 June 2016, or of one of auxiliary requests 6 to 11 filed with letter of 12 August 2020,

or as a further auxiliary measure

that the case be remitted for any issue not yet addressed in the first instance proceedings.

Appellant 2 requested

that the contested decision be set aside and that the European patent be revoked.

VII. Independent claim 1 according to the **main request** reads as follows:

"*1. Process for manufacturing aqueous mineral materials comprising the steps of:*

a. providing at least one mineral material in the form of an aqueous suspension or in dry form,

b. providing at least one partially or totally lithium-neutralized water-soluble organic polymer, selected from the group of acrylic or methacrylic acid homopolymers and/or copolymers of acrylic and/or methacrylic acid with one or more acrylic, vinyl or allyl monomers totally or partially neutralised by a lithium ion containing base or by a combination of a lithium ion containing base with one or more of the neutralization agents having a monovalent neutralizing function or a polyvalent neutralizing function,

wherein the lithium ion-containing base is chosen among basic components in dry form or in solution,

and will be implemented on the H_3O^+ containing monomer before polymerisation and/or on the H_3O^+ containing polymer after polymerisation of the monomer, wherein the molar rate of non-lithium neutralised acid groups is in the range comprised between 0% and 10%,
c. combining the at least one partially or totally lithium-neutralised water-soluble organic polymer of step b) with the at least one mineral material of step a),
e. screening and/or concentrating the combined material."

Claim 1 of the **first and second auxiliary requests** is identical to above claim 1.

The **third, fourth and fifth auxiliary requests** include a claim 1 which differs from that of the main request in that it comprises the additional step "*d. grinding the mineral material*".

Claim 1 of **auxiliary requests 6, 7 and 8** differs from that of the main request in the following respects (amendments put in evidence by the board):

"*1. Process for manufacturing aqueous mineral materials comprising the steps of...*
wherein the molar rate of ***non-neutralised acid groups is in the range comprised between 0% and 75% and the molar rate of*** *non-lithium neutralised acid groups is in the range comprised between 0% and 10%...*"

Claim 1 of **auxiliary requests 9, 10 and 11** differs from claim 1 of auxiliary request 6 in that it comprises the additional step "*d. grinding the mineral material*".

Reasons for the Decision

1. *Main request - Inventive step*

1.1 The claimed subject-matter (see also paragraph [0001] of the patent) concerns a process for manufacturing an aqueous mineral material in the form of an aqueous suspension or in dry form including the steps of:
(a) providing a mineral material in the form of an aqueous suspension or in dry form,
(b) providing a partially or totally lithium-neutralized water-soluble organic polymer wherein the molar rate of non-lithium neutralised acid groups is in the range comprised between 0% and 10%,
(c) combining the partially or totally lithium-neutralised water-soluble organic polymer with the mineral material, and
(e) screening and/or concentrating the combined material.

1.2 As stated in the description (paragraphs [0015] and [0019]) the goal of the patent is the provision of a manufacturing method of aqueous suspensions of mineral material allowing the use of water-soluble organic polymers whatever their polydispersity and having a high dry solid content, while having at once a low Brookfield™ viscosity that remains stable over time, a reduced dispersant and/or grinding aid agent content and/or thermally and/or mechanically increased solid content, as well as a pH stability over time.

1.3 It is not in dispute that document **D1** (in particular column 4, lines 12-27, as well as column 7, lines 24-45 and tables 1 and 2) also addresses the provision of aqueous suspensions of mineral material having high dry

solid content, while having at once a low Brookfield™ viscosity that remains stable over time and a reduced dispersant and/or grinding aid agent content. Thus, its purpose largely overlaps with that reported in the patent in suit, and as stated in the board's preliminary opinion, D1 is a suitable starting point for the evaluation of inventive step and its example 2-3 can be held to represent the closest prior art.

1.4 It is also not in dispute that the process of D1, example 2-3, already fulfills all the goals identified in the patent in suit and that the latter does not contain any comparison with respect to this closest prior art.

1.4.1 The patent proprietor referred to example 4 of the patent in suit, which concerns aqueous suspensions of ground calcium carbonate with 75 weight % of the particles having a diameter lower than 1 micrometer (mineral 4b described in paragraphs [0122] - [0125] of the patent), and which are thus similar to those of the closest prior art. In particular, it argued that table 5 would show that the viscosity of the aqueous suspensions obtained by using a totally or partially neutralised lithium polyacrylic acid or a lithium/ sodium polyacrylic acid as claimed was by large lower than that obtained by using totally sodium/magnesium, potassium or sodium neutralised polyacrylic acids, which were admittedly different from the totally sodium/calcium neutralised polyacrylic acid of the closest prior art. The proprietor related also to Example 3 and table 4 which would show a similar behaviour of totally lithium neutralised polyacrylic acids in comparison with a totally sodium/magnesium neutralised polymer.

Moreover, table 5 would show the criticality of selecting a polymer having a molar rate of non-lithium neutralised acid groups not greater than 10%.

1.4.2 The board notes that, even though the lower viscosity of the lithium totally or partially neutralised polyacrylic acids shown in the above mentioned examples and tables 4 and 5 is not disputed, it is a fact that in the process of example 4 (paragraph [0181]), the neutralised polymer is added **after wet grinding** the calcium carbonate as described in paragraphs [0122] - [0125] and **after an upconcentrating step in view of dispersing a filter-cake issued from an upconcentrated wet ground marble**, which is mineral 4b described in said paragraph [0125].

Therefore the tests of example 4 concern a process very different from that of the closest prior art wherein the neutralised polymer is added as a grinding agent to the calcium mineral suspension **before grinding** and **without any upconcentrating step**.

A similar consideration applies to the tests of example 3, wherein (paragraph [0159]) the neutralised polymer is added as dispersing agent **after wet grinding** the calcium carbonate, and not as grinding agent before wet grinding like in D1.

Therefore these tests cannot show any advantage of the claimed subject-matter over the closest prior art.

1.4.3 As regards the alleged criticality of the molar amount of non-lithium neutralised acidic groups in the polymer used, the board remarks that tests 31 and 32 of example 4 of the patent, which concern the use of a polyacrylic acid totally neutralised with lithium and

50 mol% potassium or 15 mol% sodium, can be compared with test 33 (polyacrylic acid neutralised with 93 mol% lithium and 7 mol% sodium) or test 30 (polyacrylic acid only partially, 85 mol%, lithium neutralised and not containing non-lithium neutralising ions), both being according to claim 1 at issue.

The respective initial viscosities of the obtained aqueous mineral suspensions are the following:

- tests 31 and 32 (not according to claim 1): 71 and 52 mPa.s, respectively;
- tests 33 and 30 (according to claim 1): 60 and 74 mPa.s, respectively.

Furthermore. the viscosities measured after 8 days are all below 200 mPa.s.

From these comparisons it can thus not be derived that the selection of a particular molar amount of non-lithium ions in the lithium neutralised polyacrylic acid brings about any visible effect.

Therefore all these tests cannot show any technical advantage over the closest prior art either.

1.4.4 The board thus notes that, even though the patent offers a different solution to the technical problems addressed (according to the closest prior art the solution consists in lowering and controlling the temperature during the grinding step such as it remains below 60 °C (a step which is also not excluded from the wording of claim 1 at issue), whilst in the patent it consists in the selection of a partially or totally lithium neutralised polymer), this difference cannot modify the conclusion that the patent in suit does not show any improvement over the closest prior art.

1.4.5 Starting from example 2-3 of D1, as the closest prior art, the technical problem convincingly solved by means of the claimed process can thus only be formulated as the provision of a further process for manufacturing aqueous mineral materials having similar properties.

1.5 Example 2-3 of D1 (column 6, lines 13-19, 26-32 49-63) discloses the preparation of an aqueous suspension of calcium carbonate wherein a suspension comprising coarse calcium carbonate having an average particle size of 50 micrometers and a totally neutralised polyacrylic acid having a molecular weight of 4000, wherein 70% of its functional groups are neutralised by sodium ions and 30% by calcium ions, is ground in a Dyno-Mill type grinder equipped with a separator with a mesh of 300 microns for separating the corundum beads of the grinder from the aqueous suspension of calcium carbonate. Moreover the grinding temperature is maintained at 25 °C.

Therefore, the process according to the closest prior art differs from that of claim 1 at issue insofar as
- the used polyacrylic acid is not a totally or partially lithium neutralised polymer as required in claim 1 at issue, i.e. that the molar rate of non-lithium neutralised acid groups be in the range comprised between 0% and 10%; and
- it does not include a step (e) of screening and/or upconcentrating the combined material (calcium carbonate + neutralised polyacrylic acid).

1.5.1 The board however notes that D1 explicitly discloses (column 5, lines 50 to 53) that at discharge of the grinder the suspension of finely ground calcium carbonate is separated continuously from the grinding materials and **particles of calcium carbonate which are**

too coarse are rejected, thus implying necessarily a screening step for the too coarse particles.

Therefore, it was obvious for the skilled person to apply a screening step to the process of example 2-3 of D1.

1.5.2 Moreover, D1 explicitly teaches (column 5, line 13-17 and 21ff.) that "In accordance with a variant that has been found to be of interest, the polymers and/or copolymers of the invention in aqueous solution can be totally or partially neutralized by a neutralizing agent having a monovalent cation" and that "Suitable monovalent cations include the alkali metal ions and similar cations, particularly lithium ...).

A similar disclosure is also found in claims 6 to 8 of D1 relating specifically to the use as grinding agent of a polymer at least partly neutralised by a base containing a cation selected from the group of alkali metals, for example lithium.

1.5.3 Therefore the skilled person by following this teaching would have found in the disclosure of D1 the motivation for trying, as an alternative to the totally calcium/ sodium neutralised polyacrylic acid of example 2-3, other polymers suggested therein as being advantageous, such as the totally lithium neutralised polyacrylic acid suggested at column 5, line 13-17 and 21ff., in the expectation of obtaining an aqueous suspension of calcium carbonate having similar properties.

It follows that the skilled person would thus arrive at this modification of the closest prior art just by following the explicit teaching of the same document of departure D1, and the board thus cannot agree with the

proprietor's argument - in particular in the absence of any particular advantage and comparative test with the closest prior art D1 - that the skilled person could have chosen a lithium neutralised polyacrylic acid only retrospectively with previous knowledge of the patent in suit.

1.5.4 As regards the additional feature of claim 1 requiring that the organic polymer is neutralised by a lithium ion containing base chosen among basic components in dry form or in solution and implemented on the H_3O^+ containing monomer before polymerisation and/or on the H_3O^+ containing polymer after polymerisation of the monomer, the board remarks that this feature, even if it were not considered implicit from the definition of the polymer itself, is certainly also disclosed or at least suggested by the teaching of D1 relating in the above mentioned claims to the use of a base of a pH neutralising agent having a monovalent cation for neutralising the used polymer. Moreover, it has not been shown that such a feature would be critical or brings about any additional advantage. Therefore, it cannot contribute to support the inventiveness of the claimed subject-matter.

1.6 The board thus concludes that the subject-matter of claim 1 of the main request lacks inventive step (Article 56 EPC).

1.7 The main request is thus not allowable.

2. *Auxiliary requests*

2.1 Since each claim 1 of the first and second auxiliary requests is identical to claim 1 of the main request, and the additional features of the third to fifth

auxiliary requests and auxiliary requests 6 to 11, i.e. the presence of a grinding step of the mineral material and a molar amount of 0 to 75% of non-neutralised acid groups in the used organic polymer - thus encompassing totally neutralised ones - are already known from D1 as discussed above, they cannot contribute to further support inventive step.

2.2 The board thus concludes that the subject-matter of claim 1 of all the auxiliary requests on file lacks inventive step for the same reasons as those exposed with respect to the main request.

Since the auxiliary requests were found not to meet the requirements of Article 56 EPC, as explained *infra*, the issues surrounding their admittance into the proceedings do not need to be addressed.

3. *Request for remittal*

3.1 The proprietor requested that the case be remitted for any issue not yet addressed in the first instance proceedings. However, since inventive step based on D1 as closest prior art had been already addressed before the opposition division there is no need to consider this request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated