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**Datasheet for the decision
of 6 November 2024**

Case Number: T 0774/22 - 3.3.06

Application Number: 14710308.9

Publication Number: 2976391

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C09D11/00, C08K3/26, C09J11/04,
D21H17/67, C09D7/61

Language of the proceedings: EN

Title of invention:
PRECIPITATED CALCIUM CARBONATE, A METHOD FOR ITS MANUFACTURE
AND USES THEREOF

Patent Proprietor:
IMERTECH SAS

Opponent:
Omya International AG

Headword:
Precipitated calcium carbonate/Imertech

Relevant legal provisions:
EPC Art. 83, 56

Keyword:

Sufficiency of disclosure - undue burden (main request and auxiliary requests 1-4)

Inventive step - (no) (auxiliary request 5)

Decisions cited:

Catchword:



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

Case Number: T 0774/22 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 6 November 2024

Appellant: IMERTECH SAS
(Patent Proprietor) 43, quai de Grenelle
75015 Paris (FR)

Representative: Haseltine Lake Kempner LLP
One Portwall Square
Portwall Lane
Bristol BS1 6BH (GB)

Appellant: Omya International AG
(Opponent) Baslerstrasse 42
4665 Oftringen (CH)

Representative: Maiwald GmbH
Elisenhof
Elisenstraße 3
80335 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
26 January 2022 concerning maintenance of the
European Patent No. 2976391 in amended form.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: R. Elsässer
C. Heath

Summary of Facts and Submissions

I. The appeals of both the patent proprietor and the opponent lie from the decision of the opposition division to maintain the patent in amended form, based on the first auxiliary request then on file.

The main request, namely the patent as granted, was found not to meet the requirements of Article 100(b) EPC, because the invention as defined in independent product claim 2 was held to be not sufficiently disclosed.

The first auxiliary request, in which claim 2 as granted and all its dependent claims were deleted, was found to involve an inventive step over **D4** (WO 2008/128545 A1), *inter alia* because the skilled person would not consider the teaching of **D5** (US 4,877,598).

II. Independent granted claims 1 and 2 read as follows:

"1. A process for the manufacture of precipitated calcium carbonate which is suitable as opacifier, which process comprises

a) a step of providing CaO, which is reacted with water to form dry Ca(OH)₂;

b) a step wherein the dry Ca(OH)₂ of step a) is contacted with water to form a slurry; and

c) a step wherein the slurry of Ca(OH)₂ from step b) is carbonated with CO₂."

"2. A precipitated calcium carbonate comprising particles which are at least partially in the form of nanofibers or nanochain like agglomerates constituted

by at least two interconnected primary particles, wherein the precipitated calcium carbonate is in the form of a slurry formable by the method of claim 1 and the slurry comprises 19 to 60% by weight of precipitated calcium carbonate."

- III. With its grounds of appeal, the opponent and appellant requested the full revocation of the patent, arguing *inter alia* that the subject-matter of claim 1 found allowable by the opposition division lacked inventive step over **D5**, when taking into account the teaching of **D4**.
- IV. With its grounds of appeal, the patent proprietor and appellant refiled the five auxiliary requests submitted in first instance, whereby the claim request found allowable by the opposition division was ranked last as auxiliary request 5.
- V. With its reply to the proprietor's appeal, the opponent argued *inter alia* that the patent as granted and the auxiliary requests 1-4 did not meet the requirements of Article 83 EPC.
- VI. After having received the board's preliminary opinion, the proprietor stated with letter dated 1 August 2024 not to have any further submission at this time, and with letter dated 3 October 2024, it announced not to attend the scheduled oral proceedings. These were then cancelled.
- VII. The board understands the parties' final requests to be as follows:

The appellant-proprietor requests that the decision under appeal be set aside and that the patent be

maintained as granted or, as an auxiliary measure, that the patent be maintained in amended form, based on one of auxiliary requests 1-5 filed with the grounds of appeal.

The appellant-opponent requests that the decision under appeal be set aside and the patent be revoked.

Reasons for the Decision

1. Preliminary remarks
 - 1.1 Although the proprietor initially requested oral proceedings in these appeal proceedings, it then declared not willing to attend the hearing scheduled for 16 October 2024.
 - 1.2 In view of the established case law (Case Law of the Boards of Appeal, 10th ed., III.C.4.3.2) that a statement announcing non-attendance at oral proceedings amounts to the withdrawal of the request for oral proceedings, the board is in a position to decide without holding an oral hearing because the opponent's main request, namely the full revocation of the patent, can be granted.
 - 1.3 In the communication pursuant to Article 15(1) RPBA, the board announced its preliminary opinion that the invention as defined in granted claim 2 appeared not to be sufficiently disclosed so that the proprietor's main request was not allowable; the same applied to auxiliary requests 1-4; the sole claim of auxiliary request 5 lacked an inventive step.
 - 1.4 As no counter arguments have been submitted by the proprietor, the board sees no reason to deviate from

its preliminary opinion so that the reasoning set out therein is still valid.

2. Main request - sufficiency of disclosure

2.1 The board has come to the conclusion that the invention as defined in granted claim 2 is not sufficiently disclosed because, as evidenced by the opponent, essential information necessary to obtain the claimed PCC material comprising nanofibers and/or nanochain-like agglomerates is not provided in the patent.

2.2 The experimental results submitted by the opponent (with letter of 30 July 2021 and resubmitted with the reply to the proprietor's appeal) show that such a material can only be obtained if step c) is carried out at a temperature of around 20°C. In contrast, when the carbonation is carried out at 11°C or 50°C, no PCC having nanochain-like agglomerates or nanofibers can be obtained. It follows that, although the carbonation temperature is essential for carrying out the invention, this information is missing from the patent.

2.3 The patent proprietor's arguments in this regard are not convincing for the following reasons.

2.3.1 The proprietor contested the opponent's objection, also endorsed by the opposition division, by referring to its own experiments filed on 17 September 2021 and resubmitted with the grounds of appeal, which showed that both at 18°C and 50°C, a material according to the invention could be produced.

2.3.2 The Board observes that these experiments tie in quite well with those of the opponent mentioned above, since in both types of experiments, example 1 of the patent

has been reproduced at different temperatures, namely at 18°C and 50°C (proprietor) and at 11, 20 and 50°C (opponent).

Furthermore, the parties agree that the products obtained at room temperature (18°C and 20°C, respectively) comprise nanochain-like agglomerates as claimed, as can be seen from the pictures reproduced on page 10 of the proprietor's grounds of appeal and on page 5 of the opponent's reply. They also agree that the products obtained at 50°C comprise needle-like, scalenohedron particles, see the pictures reproduced on page 7-9 of the proprietor's grounds of appeal and page 4 of the opponent's reply.

- 2.3.3 The parties however differed in their assessment as to whether this last product could be considered as a PCC according to claim 2. While the opponent argued that the material obtained at 50°C was not a PCC according to claim 1, the proprietor pointed out that the patent taught in several instances that the PCC may form scalenohedrons and that claim 2 merely required that at least a part of the PCC are in the form of elongated entities.

The board cannot accept the proprietor's argument because claim 2 indeed does not require that all the PCC particles have the form of nanofibers and nanochain-like agglomerates, but at least some of these must be present. It is thus not correct that the claim merely requires that a part of the PCC is in the form of an "elongated entity".

The proprietor furthermore did not indicate where in the picture on page 10 of its grounds of appeal nanofibers or nanochain-like agglomerates can be seen,

and the board cannot identify such material either.

Neither did the proprietor argue that the scalenohedral particles themselves were to be considered as nanochain-like agglomerates. This would also be in contradiction to the description where it is clearly taught that scalenohedral particles are not to be considered as a specific form of nanofibers or nanochain-like agglomerates but rather as an alternative thereto. In particular, it is set out that in the context of the invention, nanofibers and nanochains are agglomerates of primary particles, i.e. they gain their elongated shape due to agglomeration, whereby scalenohedron particles are unagglomerated, elongated primary particles; see page 4, line 1-2 of the patent.

Therefore, the board has come to the conclusion that the patent proprietor has not shown that at a carbonation temperature of 50°C, a PCC slurry according to claim 2 can be obtained.

- 2.3.4 The proprietor further pointed out that the experiments at least demonstrated that the invention could be carried out if the carbonation temperature is set at a value of around 20°C.

This is not disputed by the Board, however for an invention to be sufficiently disclosed, it is not sufficient that it can be shown at a later stage how it can be carried out. Rather, this teaching must be provided in the patent itself.

In this context it is once more pointed out that there is no teaching in the patent that the carbonation temperature is a relevant factor, let alone that the

temperature must be set at about 20°C, in order to obtain a PCC slurry according to the subject-matter of claim 2.

- 2.3.5 It could of course be argued that in the absence of any indication concerning the temperature in step c), it would be obvious for the skilled person to carry out the carbonation at room temperature.

The board recognises that this is one possibility, but it is not the only one. For instance, since step (b), preceding step (c), is carried out at a temperature of preferably 10-60°C (par. 0050) and since the slurry produced in step (b) can be used directly for the carbonation step (c), without any teaching in the patent to cool down the slurry, or heat it up prior to its treatment with CO₂, any temperature in the range 10-60°C could be chosen for carrying out the subsequent step (c). It follows that, when repeating example 1 of the patent, a product according to claim 2 could only be obtained by chance provided that the skilled person selected the correct temperature - i.e. 20°C - for carrying out step (c).

- 2.3.6 It could well also be argued that, when failing to reproduce example 1 of the patent, the skilled person only had to adjust the temperature in step (c) so that not more but a few routine experiments would be necessary in order to successfully carry out the invention.

The board cannot accept this argument either because in case of a failure to reproduce example 1, the skilled person would not know that it is specifically the temperature in step (c) that needed to be adjusted - it could as well be the temperature in step (a) and/or (b)

which needed to be adjusted, or even another parameter, such as the nature of the crystallisation controller, which is only generically disclosed in example 1.

2.3.7 Finally the proprietor argued that the fact that variants of the invention were not capable of being performed did not give rise to the conclusion that the invention could not be carried out at all. This argument is however not convincing because, as set out above, the problem is not that the invention can only be carried out at a specific temperature but rather, that the relevance of this temperature is not disclosed in the patent, and so there is a manifest lack of guidance on how to reproduce the invention at all.

2.4 Therefore the Board has come to the conclusion that carrying out the invention involves an undue burden for the skilled person so that the invention is insufficiently disclosed, and thus does not meet the requirements of Article 83 EPC.

3. Auxiliary requests 1-4

Claim 2 of auxiliary request 1 reads as follows (emphasis identifying the amendment to claim 2 as granted added by the board):

"A precipitated calcium carbonate comprising particles which are at least partially in the form of nanofibers or nanochain like agglomerates constituted by at least two interconnected primary particles, wherein the precipitated calcium carbonate is in the form of a slurry formable by the method of claim 1 and the slurry comprises 27 ~~19~~ to 60% by weight of precipitated calcium carbonate."

Claim 2 of auxiliary request 2 reads as follows:

"A precipitated calcium carbonate comprising particles which are at least partially in the form of nanofibers or nanochain like agglomerates constituted by at least two interconnected primary particles, wherein the precipitated calcium carbonate is in the form of a slurry formable by the method of claim 1 and the slurry comprises 28 to 35% ~~19 to 60%~~ by weight of precipitated calcium carbonate."

Claim 2 of auxiliary request 3 reads as follows:

"A precipitated calcium carbonate comprising particles which are at least partially in the form of nanofibers or nanochain like agglomerates constituted by at least two interconnected primary particles, wherein at least a part of the nanofibers or nanochain like agglomerates, and, if present, scalenohedron particles form microshells, and wherein the precipitated calcium carbonate is in the form of a slurry formable by the method of claim 1 and the slurry comprises 28 to 35% ~~19 to 60%~~ by weight of precipitated calcium carbonate."

Claim 2 of auxiliary request 4 reads as follows

"A precipitated calcium carbonate comprising particles which are at least partially in the form of nanofibers or nanochain like agglomerates constituted by at least two interconnected primary particles, wherein the nanofibers or nanochain like agglomerates are at least partially combined in the form of microshell like aggregates, preferably having an aggregate median size (D50) from 0.8 to 2.5 μm , wherein the precipitated calcium carbonate is in the form of a slurry formable by the method of claim 1 and the slurry comprises 28 to

35% ~~19 to 60%~~ by weight of precipitated calcium carbonate."

3.1 The board notes that none of these amendments is suitable to overcome the lack of guidance discussed above in connection with the main request, thus the same reasons apply, so that none of these requests meets the requirement of Article 83 EPC either.

4. Auxiliary request 5 - Inventive step

Granted claim 1 is the sole claim of this request.

4.1 The invention concerns a method for making precipitated calcium carbonate in the form of a slurry.

4.2 **D4** is directed to a similar process and the parties agreed that this document represents a suitable starting point for the assessment of inventive step.

Claim 1 thereof discloses a method of making PCC where in a first step, Ca(OH)_2 is contacted with CO_2 to form a slurry of CaCO_3 . This slurry is then transferred in a continuous or non continuous way to another reaction vessel where CaO , lime or dry calcium hydroxide is added to the slurry. This slurry is then transferred back, again in a continuous or non continuous way, to the carbonation vessel to repeat the carbonation reaction. This method thus discloses steps b) and c) of claim 1 at issue.

It is noted that the method of **D4** teaches that the dry calcium hydroxide is not contacted with pure water but with an aqueous slurry of the PCC formed in the first step, but this is not excluded by the claim. Likewise, the slurry produced thereby does not only contain the

added $\text{Ca}(\text{OH})_2$ but also the PCC already formed in the first step but this is also not excluded by the claimed process. Therefore, the only feature not disclosed in **D4** is step a).

- 4.3 According to par. 0054 of the contested patent, the claimed process yields slurries with a very high content of calcium carbonate. The patent further explains that, compared to the state of the art one-step carbonisation processes, in which CaO is treated with an excess of water, the viscosity of the $\text{Ca}(\text{OH})_2$ slurry obtained via the claimed two-steps method was much lower, allowing for a better control of the product properties. Accordingly, the patent proprietor argued that the claimed method allowed to produce $\text{Ca}(\text{OH})_2$ slurries with reduced viscosity compared to the known one-step processes, which facilitated the control of the PCC morphology.

The Board has noted that the effect on the viscosity of the $\text{Ca}(\text{OH})_2$ slurry was disputed by the opponent. As can be seen from the experimental results submitted with its grounds of appeal the viscosities of a slurry produced with the claimed two-steps method, on the one hand, and with the prior art one-step method, on the other hand, only differ to a degree lying within the measurement accuracy.

The Board is however of the opinion that this effect, even if proven, would anyway not be relevant, since **D4** is not limited to the traditional one-step processes where CaO is added to an excess of water but also discloses a process where dry $\text{Ca}(\text{OH})_2$ is used, see above. Thus, when considering this specific embodiment, the only difference to claim 1 is that **D4** does not disclose that the $\text{Ca}(\text{OH})_2$ is produced from CaO and

water, but no particular effect underlies this distinguishing feature. In particular it has not been shown that using dry $\text{Ca}(\text{OH})_2$ produced according to step a) has any advantage compared to using dry $\text{Ca}(\text{OH})_2$ obtained by any other route.

4.4 So even if **D4** is silent as to how the dry $\text{Ca}(\text{OH})_2$ is sourced or produced, a process as defined in step a) of claim 1 at issue is therefore nothing more than an alternative to the one known from **D4**.

4.5 The solution to this problem, as proposed in claim 1 at issue, is however obvious, since the production of dry $\text{Ca}(\text{OH})_2$ from CaO and water is well known to the skilled person, see instance **D5**, so that the board has come to the conclusion that the skilled person faced with the above problem would arrive in an obvious way to the subject matter of claim 1 at issue, which therefore does not to involve an inventive step within the meaning of Article 56 EPC.

5. As none of the proprietor's requests is allowable, the appeal of the opponent succeeds.

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. Wille

J.-M. Schwaller

Decision electronically authenticated