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**Datasheet for the decision
of 24 January 2015**

Case Number: T 1136/12 - 3.3.05

Application Number: 07866096.6

Publication Number: 2104654

IPC: C04B35/486

Language of the proceedings: EN

Title of invention:

ZIRCONIA BODY AND METHODS

Applicant:

3M Innovative Properties Company

Headword:

Translucent zirconia/3M

Relevant legal provisions:

EPC Art. 83

Keyword:

Sufficiency of disclosure (no) - undue burden

Decisions cited:

T 0409/91, T 0435/91, T 1743/06

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 1136/12 - 3.3.05

**D E C I S I O N
of Technical Board of Appeal 3.3.05
of 24 January 2015**

Appellant: 3M Innovative Properties Company
(Applicant) 3M Center
Post Office Box 33427
Saint Paul, MN 55133-3427 (US)

Representative: Vossius & Partner
Siebertstrasse 3
81675 München (DE)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 28 November
2011 refusing European patent application No.
07866096.6 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman G. Raths
Members: J.-M. Schwaller
P. Guntz

Summary of Facts and Submissions

I. This appeal lies from the decision of the examining division refusing under Articles 83 and 84 EPC European patent application No. 07 866 096.6 in the version filed on entry into the regional phase before the EPO on 27 July 2009, claim 1 thereof reading as follows:

"1. A translucent zirconia sintered body comprised of primary particles and having a density of at least 99 percent of full density, the primary particles having: a major phase which is tetragonal zirconium oxide, and a size no greater than 100 nm; and wherein the diameter of any pores which are present in the zirconia sintered body is not more than about 25 nm."

II. By letter of 28 December 2011 the applicant lodged an appeal against said decision. With the statement of grounds of appeal dated 10 April 2012, the appellant submitted its arguments and, as an auxiliary measure, requested oral proceedings under Article 116 EPC.

III. In a communication dated 4 August 2014, the board expressed its preliminary opinion that the operating conditions for the preparation of the specific zirconia sol essential for the preparation of the zirconia sintered body having the physical characteristics defined in claim 1 were insufficiently disclosed for the invention to be carried out without undue burden by a person skilled in the art.

IV. By letter of 27 October 2014, the appellant merely declared that it withdrew its request for oral proceedings.

- V. From the written submissions, the board establishes that the appellant requests that the contested decision be set aside and that a patent be granted on the basis of the claims according to the set of claims dated 27 July 2009.

Reasons for the Decision

1. Preliminary remark

Since the appellant withdrew its request for oral proceedings after having been informed by the board that the claimed subject-matter did not fulfil the requirements of the EPC, in particular those of Article 83 EPC, a final decision can be reached on this issue without infringing the appellant's right to be heard.

2. Article 83 EPC - statutory law and jurisprudence

It is established jurisprudence that the requirements for sufficiency of disclosure are met if the invention as defined in the claims could be performed at the filing date of the application by a person skilled in the art in the whole area claimed without undue burden, using common general knowledge and having regard to further information given in the patent in suit (see e.g. T 409/91, OJ 1994, 653, reasons 3.5; T 435/91, OJ 1995, 188, reasons 2.2.1; T 1743/06, reasons 1.1).

3. Disclosure of the invention

The question of whether the claimed invention was sufficiently disclosed at the filing date of the application boils down to whether there was sufficient

guidance in the application as filed for the skilled person to prepare the specific zirconia sol used as the starting material in the preparation process of the claimed zirconia sintered body.

The appellant did not reply to this point that the board raised in its communication dated 4 August 2014, and in the grounds of appeal it merely argued that the preparation of the zirconia sol was explained in detail on pages 21 et seq. and in the examples, in which specific reference was made to US 2006/0148950.

3.1 Information to be found in the application in suit

3.1.1 Description

The board observes that pages 21 to 30 of the application do indeed address the preparation of the zirconia sol, but either use vague and generic features or disclose multiple choices that the skilled person has to perform.

For instance, the following information is found in the description:

*"The zirconia sol comprising zirconia particles can be made by preparing a first feedstock that contains a zirconium salt and subjecting the first feedstock **to a first hydrothermal treatment** to form a zirconium-containing intermediate. A second feedstock is then formed by **removing at least a portion of any by-product** formed in the first hydrothermal treatment and subjecting the second feedstock to **a second hydrothermal treatment** to form a zirconia sol that contains the zirconia particles. The first feedstock is prepared by forming an aqueous precursor solution that*

contains a zirconium salt. The anion of the zirconium salt is usually chosen so that it can be removed during subsequent steps in the process for preparing the zirconia sol. Additionally, the anion is often chosen to be non-corrosive, allowing greater flexibility in the type of material chosen for the processing equipment such as the hydrothermal reactors. **The anion of the zirconium salt is usually a carboxylate. At least 50 mole percent of the carboxylate anions have no greater than four carbon atoms.** For example, in some precursor solutions, **at least 60, 70, 80, 90, 95, 98, or 99 mole percent** of the carboxylate anions have no greater than four carbon atoms." (page 21, line 26 to page 22, line 10);

"The zirconium salt is **often zirconium acetate.**" (page 23, line 11); or

"Suitable aqueous solutions of zirconium acetate are commercially available, for example, from Magnesium Elektron, Inc. (Flemington, NJ) that **contain up to 17 weight percent zirconium, up to 18 weight percent zirconium, up to 20 weight percent zirconium, or up to 22 weight percent zirconium.** Some precursor solutions contain a yttrium salt in addition to a zirconium salt The yttrium salt is often present in an amount **up to 0.12, 0.10, 0.08, 0.06, or 0.04** grams yttrium per gram of zirconium." (page 23, line 16 to 25).

3.1.2 Examples

The three examples describe further specific details of the preparation of the claimed zirconia, in particular those concerning the calcination conditions of the zirconia precursor. The examples however do not further

specify the generic features or the multiple choices defined on pages 21 to 30 of the description, but merely state that the zirconia sol is prepared "**essentially** as described in U.S. Patent Application Publication No. 2006/0148950".

3.2 Information gaps

3.2.1 In the board's view, the description is clearly insufficient and confusing because it describes in broad terms the steps to be performed, or proposes multiple choices without however providing any guidance for identifying the features - generally identified as "preferred" in the patent literature - necessary for preparing the zirconia sol which is essential for the preparation of the final product. For the skilled reader of the application, it is clear that the zirconia sol is the exclusive precursor, because of its dispersed particulate structure, for obtaining the primary particles characterising the claimed sintered zirconia body, namely particles having a major tetragonal zirconia phase and a size no greater than 100 nm. It follows that in the absence of guidance as to how this zirconia sol is to be prepared, the skilled person cannot reproduce it, and so he cannot perform the invention.

3.2.2 The examples do not provide any further guidance about this since, apart from the perfunctory statement that the zirconia sol is prepared "**essentially** as described in U.S. Patent Application Publication No. 2006/0148950", they give no further details about the preparation of the zirconia sol essential for achieving the properties of the "translucent zirconia sintered body" defined in the claims at issue.

It is true that the presence of an example is not absolutely necessary to satisfy the requirement of sufficiency of disclosure. However, the absence of examples presupposes that the disclosure is so complete that a skilled person can carry out the invention, which is not the case here.

3.3 Conclusion

For the board, it follows from these multiple information gaps in the examples and in the description that the skilled person attempting to perform the invention is not in a position to reproduce the invention without undue burden, since he has to conduct his own investigations in order to ascertain which specific operating features would lead him to the invention. The examples do not provide any further guidance since the skilled person has to find out which example in US 2006/0148950 is to be followed and which modifications he has to carry out in order to arrive at a translucent zirconia sintered body falling within the terms of the claimed subject-matter.

For the board, these information gaps amount to a new research programme, with the consequence that the application does not meet the requirements of Article 83 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



C. Vodz

G. Raths

Decision electronically authenticated