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Datasheet for the decision of 9 July 2026

Case Number: T 1167/24 - 3.3.05

Application Number: 10803976.9

Publication Number: 2459310

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Language of the proceedings: EN

Title of invention:
SILICA-STABILIZED ULTRAFINE ANATASE TITANIA, VANADIA CATALYSTS, AND METHODS OF PRODUCTION THEREOF

Patent Proprietor:
Tronox LLC

Opponents:
Venator Germany GmbH
Umicore AG & Co. KG

Headword:
SILICA-STABILIZED ULTRAFINE ANATASE TITANIA/Tronox

Relevant legal provisions:
EPC Art. 123(2)

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It can be changed at any time and without notice

Keyword:
Amendments - allowable (no)

Decisions cited:

Catchword:

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Case Number: T 1167/24 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 9 July 2026

Appellant: (Patent Proprietor)	Tronox LLC 3301 NW 150th St Oklahoma City, OK 73134 (US)
Representative:	Carpmaels & Ransford LLP One Southampton Row London WC1B 5HA (GB)
Respondent: (Opponent 1)	Venator Germany GmbH Dr. Rudolf Sachtleben Strasse 4 47198 Duisburg (DE)
Representative:	Seyer & Nobbe Patentanwälte PartmbB Mülheimer Straße 210 47057 Duisburg (DE)
Respondent: (Opponent 2)	Umicore AG & Co. KG Rodenbacher Chaussee 4 63457 Hanau-Wolfgang (DE)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstraße 4 81675 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted/ electronically transmitted on 12 August 2024 concerning maintenance of the European Patent No. 2459310 in amended form.**

Composition of the Board:

Chair	R. Winkelhofer
Members:	R. Elsässer
	G. Glod

Summary of Facts and Submissions

I. The patent proprietor's (appellant's) appeal is against the opposition division's decision to maintain European patent EP 2 459 310 as amended on the basis of auxiliary request 44. The patent relates to silica-stabilised anatase titania catalyst supports and vanadia catalysts for NOx reduction.

II. The opposition division had concluded that product claim 1 of the patent as granted (main request) contained added subject-matter and was therefore not allowable (Article 123(2) EPC). The same applied to auxiliary requests 1-43 and 1B to 42B. Auxiliary request 44, in which product claims 1-9 had been deleted, was found allowable.

III. Claim 1 as granted, with amendments by comparison with claim 1 as filed highlighted, reads as follows:

"*1. A catalyst support material, comprising:*
anatase titania particles comprising ≥ 85 wt% dry weight of TiO_2 and greater than 0% and ≤ 10 wt% dry weight of SiO_2,
wherein the SiO_2 comprises silicon atoms which are at least 50% in the Q^3, Q^2, Q^1 and Q^0 coordination environments, and
wherein over 50% of the SiO_2 is ~~substantially in a low molecular weight and/or~~ in a small nanoparticle form of diameter <5 nm as seen by scanning electron microscopy or by transmission electron microscopy."

In the following, the abbreviations "SEM" and "TEM" are used to denote scanning electron microscopy and

transmission electron microscopy, respectively. Moreover, the terms "silica" and "SiO_2" are used interchangeably.

IV. The appellant argued *inter alia* that the incorporation into claim 1 of the method for determining the quantity of particles having a diameter of <5 nm, namely "*as seen by scanning electron microscopy or by transmission electron microscopy*", did not add subject-matter.

Respondent 1 (opponent 1) refuted these arguments.

V. The appellant requested that the decision under appeal be set aside and amended such that the patent be maintained on the basis of the main request or auxiliary request 43. The appellant further maintained auxiliary requests 1-42, 44-47 and 1B-42B, all filed before the opposition division, and auxiliary requests "3i-9i", "3Bi-9Bi", "1li-27i", "11Bi-27Bi", "32i-35i", "32Bi-35Bi", "40i-42i" and "40Bi-42Bi".

Respondent 1 requested that the appeal be dismissed.

Respondent 2's (opponent 2's) requests corresponded to opponent 1's.

The parties subsidiarily requested remittal to the opposition division.

Reasons for the Decision

1. Claim interpretation

In the following, in the appellant's favour, claim 1 is interpreted as proposed by the appellant, namely such that the SiO_2 mentioned in the claim must be part of

the anatase titania particles. Therefore, any loose, isolated silica particles are not relevant for the diameter parameter "*wherein over 50% of the SiO_2 is in a small nanoparticle form of diameter <5 nm as seen by scanning electron microscopy or by transmission electron microscopy*". Instead, what is relevant is the patchy SiO_2 coating on the anatase particles; see below.

2. Main request

2.1 The requirements of Article 123(2) EPC are not met since the feature "*wherein over 50% of the SiO_2 is a small nanoparticle form of diameter <5 nm as seen by scanning electron microscopy or by transmission electron microscopy*" is not directly and unambiguously derivable from the application as filed.

2.2 It is undisputed that there is no literal support for the feature in the application as filed. While claim 1 as filed already contains the option whereby the SiO_2 is "*substantially in small nanoparticle form*", with the term "*substantially*" being equivalent to "*more than 50%*" according to paragraphs [0042] and [0043] of the application as filed, and the expression "*small nanoparticle form*" being equivalent to "*particles having a diameter of <5 nm*" according to claim 6 as filed, the application as filed does not explicitly disclose how this parameter can be determined. In particular, it is not disclosed that it can be determined by "seeing" using SEM or TEM, as claimed.

2.3 The appellant argued in this context that a parameter of this sort required measurement. Therefore, the skilled person would construe the feature "*more than 50% of the SiO_2 is in a small nanoparticle form of*

< *5nm*" in the sense of "as measured by a suitable method". Thus, the skilled person would look to the remaining parts of the application for a suitable method to determine the diameter of the silica particles. In particular, the appellant referred to paragraph [0066] of the application as filed, which disclosed an exhaustive list ("consist of") of the methods used to characterise *inter alia* the structure of the materials. Since a particle diameter was a structural feature, one of the methods listed had to be used to determine the parameter in question. It was also part of the common general knowledge that, of the various methods listed, TEM and SEM were the only suitable methods for determining a particular diameter. This was confirmed elsewhere in the application as filed, in particular in paragraphs [0028], [0115], [0119], [0128] and [0129], in which TEM was used to determine the diameter of silica particles. Moreover, at least paragraphs [0128] and [0129] disclosed that the particles were quantified depending on their size. Furthermore, paragraph [0068] disclosed that, when analysing the TEM images, particular attention was given to characterising phase size and distribution. This was another example of the application as filed disclosing that (at least) TEM could be used to measure the parameter in question. Therefore, no subject-matter had been added.

2.4 This is not convincing.

2.4.1 With regard to the first argument, the appellant is correct in pointing out that the claimed parameter has to be measured by a suitable method. However, this does not mean that the application as filed must necessarily disclose any such method. It may well be that no such method was included in the application as filed,

whether intentionally or unintentionally. Notably, there is no indication in the application as filed that the parameter has indeed been measured. While various parameters of the examples have apparently been determined (see the tables in the examples section), the quantity of particles having a diameter of less than 5 nm has not. Therefore, the appellant's assertion that the application as filed must at least implicitly disclose a method for measuring the parameter is not persuasive.

2.4.2 The argument referring *inter alia* to paragraphs [0128] and [0129] of the application as filed is not convincing either. The appellant argued that these and other passages disclosed that TEM could be used to identify isolated silica particles and determine their size.

However, the appellant has argued that these particles are not relevant for determining the claimed parameter; see above. Therefore, even if said passages did disclose that the size and respective quantities of particles having a diameter above and below 5 nm could be determined, this would not support the claim since the particles in question do not form part of the claimed anatase particles.

Instead, as set out above, what is relevant in this context is the SiO_2 attached to the anatase particles in the form of a patchy coating.

Both paragraphs mention such a patchy coating, with paragraph [0129] also mentioning that its thickness as measured using TEM is 1-3 nm. Therefore, the disclosure of said paragraphs is essentially equivalent to claim 9 as filed, which discloses that the thickness (or depth)

of the SiO_2 patches can be determined using TEM. However, using TEM to measure the thickness of a SiO_2 coating is not the same as using it to measure the diameter of SiO_2 particles forming that patch. Therefore, these passages do not support the amendment in claim 1.

In this context, it is illustrative to imagine a combination of claims 1 and 9 as filed. This combination would support a claim directed to a catalyst support material in which the SiO_2 is substantially (over 50%) in small nanoparticle form (< 5nm) and the SiO_2 comprises patches which are substantially < 5nm deep (...), as seen by SEM or TEM. It would, however, not support a claim directed to a catalyst support material in which the SiO_2 is substantially (over 50%) in small nanoparticle form (< 5 nm), as seen by SEM or TEM. For essentially the same reasons, the passages discussed above do not support claim 1 of the main request.

2.4.3 The appellant further argued that, in the context of the application as filed, SiO_2 in the form of small nanoparticles on the one hand and SiO_2 in the form of patches on the other hand essentially meant the same. The application switched between designating the SiO_2 as patches and particles. Therefore, a method disclosed for determining the depth of the patches ("as seen by SEM or TEM") also disclosed a method for determining the size and quantities of the small nanoparticles.

However, this is not what is disclosed in the application as filed, at least not directly and unambiguously. As pointed out above, the set of claims as originally filed presents the patches as an additional feature, not as an equivalent. In contrast,

paragraph [0012] appears to present several equivalent definitions of the claimed invention, namely particles with the SiO_2 present in low molecular weight form, in nanoparticle form, as a fractional monolayer or in the form of patches, and having a depth of less than 5 nm, as seen by SEM or TEM. Even if this passage is taken to mean that there are several parameters which can alternatively be used to define the invention, that does not necessarily mean that a method that is suitable for determining one parameter is necessarily also suitable for determining the others.

It is the responsibility of an applicant/proprietor to draft its application in an unambiguous way. If there are ambiguities or uncertainties, they must not be interpreted to an opponent's detriment.

2.4.4 The appellant also referred to paragraph [0102] of the application as filed. In this specific example, the silica patches are isolated and their dimensions had been determined as being "*typically*" below 5 nm.

It is true that, since the particles forming the patches cannot be greater than the patches themselves, this passage indirectly discloses using TEM to establish that the silica particles are smaller than 5 nm.

Yet, this disclosure does not support claim 1 either because it only applies to the specific case of patches being smaller than 5 nm. Since claim 1 is not limited to such patches and there is no support in the application as filed to determine the dimensions of the silica particles in the case of larger (or "deeper"; see claim 9 as filed) patches, the passage does not support claim 1. In essence, like claim 9 as filed and

the other passages discussed above, this paragraph discloses that TEM can be used to determine the dimensions of the SiO_2 *patches* but not of the SiO_2 *particles forming* the patches.

2.4.5 Lastly, the appellant argued that the measurement method had been incorporated into claim 1 during examination proceedings, in order to comply with the Guidelines for Examination regarding Article 84 EPC. It would thus set a "*worrying precedent*" if a claim amendment made in order to satisfy the requirements of Article 84 EPC were to result in a claim contravening Article 123(2) EPC.

This is not convincing either. Article 123(2) EPC stipulates that an application or a patent must not contain subject-matter that extends beyond the original disclosure. This prohibition of added subject-matter is absolute and does not take into account the motivation of the amendment in question. Therefore, no "worrying precedent" is set when an amendment extending beyond the original disclosure is found to add subject-matter, even if it was made in good faith and in order to address an objection under Article 84 EPC.

2.5 It follows from the above that claim 1 of the main request contains subject-matter extending beyond the original disclosure. The main request thus fails.

3. The same applies to auxiliary request 43 and all the other requests on file.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

C. Vodz R. Winkelhofer

Decision electronically authenticated