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Datasheet for the decision of 16 June 2026

Case Number: T 0267/25 - 3.3.05

Application Number: 10803469.5

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Language of the proceedings: EN

Title of invention:
PARTICULATE TITANIUM DIOXIDE

Patent Proprietor:
Croda International PLC

Opponent:
DSM Nutritional Products AG

Headword:
Particulate Titanium Dioxide/Croda

Relevant legal provisions:
EPC Art. 54, 84
RPBA 2020 Art. 13(2)

Keyword:

Novelty - public prior use - burden of proof - public prior use - implicit obligation to maintain secrecy (no)
Claims - clarity - auxiliary request (no)
Amendment after summons - exceptional circumstances (no)

Decisions cited:

T 0020/25, T 0733/23, T 2463/22, T 0832/22, T 1138/20, T 1634/17

Catchword:

Europäisches Patentamt
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Office européen des brevets

Beschwerdekammern

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Case Number: T 0267/25 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 16 June 2026

Appellant: (Opponent)	DSM Nutritional Products AG Wurmisweg 576 4303 Kaiseraugst (CH)
Representative:	Kraus & Lederer PartGmbB Thomas-Wimmer-Ring 15 80539 München (DE)
Respondent: (Patent Proprietor)	Croda International PLC Cowick Hall Snaith Goole, East Yorkshire DN14 9AA (GB)
Representative:	Craven, Ian Croda Europe Limited Intellectual Property Department Cowick Hall Snaith Goole Yorkshire DN14 9AA (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted/electronically transmitted on 20 December 2024 rejecting the opposition filed against European patent No. 2516330 pursuant to Articl e 101(2) EPC.**

Composition of the Board:

Chair	R. Winkelhofer
Members:	J. Roider
	G. Glod

Summary of Facts and Submissions

I. The appeal of the opponent (appellant) lies from the decision of the opposition division to reject the opposition against European patent EP 2 516 330 B1, which relates to particulate titanium dioxide designed for use in sunscreen compositions to provide effective UV protection.

II. The following documents are relevant here:

D8 Order confirmation from Kemira Pigments Oy
D9 Certificate of analysis of PARSOL TX
D12 Declaration by Esa Latva-Nirva, filed on 2 December 2025

III. Claim 3 of the main request (claims as granted) reads as follows:

"3. A particulate titanium dioxide having an E524 of less than 9 l/g/cm, an E360 of 25 to 50 l/g/cm, and an E 360/E308 ratio of 0.5 to 1.0."

Claim 1 of auxiliary request 1 reads as follows (feature numbering indicated in the left-hand column; amendments with respect to claim 1 of the main request highlighted):

1.1 "A particulate titanium dioxide
1.2 having a median volume particle diameter of greater than 70 nm,

1.3 wherein the median volume particle diameter is 85 to 175 nm measured using a Brookhaven BI-XDC particle sizer as herein described,

1.4 having a mean length by number of 30 to 75 nm measured by transmission electron microscopy as herein described,

1.5 and having an E524 of less than 9 l/g/cm and/or an E360 of 25 to 50 l/g/cm and/or an E360/E308 ratio of 0.5 to 1.0 measured by UV/VIS spectrophotometer as herein described,

1.6 wherein the titanium dioxide particles are coated with an inorganic coating and/or organic coating,

1.7 wherein the amount of inorganic coating, when present, is in the range from 1 to 20% by weight, based on the weight of titanium dioxide core particles."

Claim 2 of auxiliary request 2 and claim 3 of auxiliary requests 3 and 4 as well as claim 1 of auxiliary request 5 are all identical to claim 3 of the main request.

Claim 1 of auxiliary request 6 is identical to claim 1 of auxiliary request 1.

Claim 1 of auxiliary request 7 is identical to claim 1 of the main request (i.e. claim 1 of auxiliary request 1 as reproduced above, but without the amendments).

Claim 1 of auxiliary request 8 is identical to claim 1 of the main request with the exception of feature 1.4,

which reads:

1.4 having a mean length of 30 to 75 nm and a mean width of 20 to 55 nm and/or a mean aspect ratio of 1.0 to 2.5:1.

In auxiliary request 9, the product claims set out above (claims 1 to 3 of auxiliary request 8) have been deleted. Therefore, method claim 1 of auxiliary request 9 corresponds to claim 6 of the main request and it incorporates the features of product claim 3 of the main request. It reads:

1.4 A method of producing particulate titanium dioxide having an E524 of less than 9 l/g/cm, an E360 of 25 to 50 l/g/cm, and an E360/E308 ratio of 0.5 to 1.0 ~~in accordance with claims 1 to 3~~, said method comprises (i) forming precursor titanium dioxide particles having a mean length of 40 to 100 nm and/or a mean width of 3 to 25 nm, and (ii) calcining the precursor particles.

IV. The respondent (patent proprietor) argued, inter alia, that the subject-matter of claim 3 of the main request was novel over an alleged public prior use. Claim 1 of auxiliary request 1 was clear.
D12 should not be admitted into the proceedings apart from the figure on page 3 thereof.
Auxiliary requests 7 to 9 did not introduce any new aspects and they overcame all objections raised thus far.

V. The appellant (opponent) argued, inter alia, that the subject-matter of claim 3 of the main request was not novel over the public prior use. Claim 1 of auxiliary request 1 was not clear. D12 should be admitted into the proceedings as it constituted a reaction to the respondent's reply to the appeal.
Auxiliary requests 7 to 9 should not be admitted under Art. 13(2) RPBA due to the absence of exceptional circumstances.

VI. Substantive requests:

(a) The appellant requests that the decision under appeal be set aside and amended such that the patent be revoked.

(b) The respondent requests that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained on the basis of one of auxiliary requests 1 to 6 filed with the reply to the appeal or, in the alternative, that the patent be maintained on the basis of one of auxiliary requests 7 to 9 filed during the oral proceedings before the board.

Reasons for the Decision

1. Main request, claim 3, novelty, Art. 54(1) and (2) EPC

The appellant argued that the subject-matter of claim 3 lacked novelty in view of the prior use (sale) as shown in D8 and D9, both filed during the opposition proceedings. During the appeal proceedings, the appellant additionally filed D12 in support of their arguments concerning the prior sale.

1.1 Admittance/consideration of D12

D12 is a declaration by Esa Latva-Nirva, a former employee of Kemira Pigments Oy, concerning the circumstances of the alleged prior sale by their employer to DSM Nutritional Products Ltd, a company belonging to the same group as the appellant. It was filed by the appellant as a reaction to the respondent's reply to the appeal.

According to the appellant, D12 was filed because the respondent had *"insisted"* that *"The data in question was produced by Kemira, and the relevant knowledge resides with them and not with DSM. Without explicit corroboration from Kemira, which has not been produced, the AO's assertion that a path length of 1 cm is no more than a hopeful guess."*. The appellant had contacted Kemira Pigments Oy again and asked them to prepare a signed declaration addressing the contested issues. D12 thus clarified the circumstances of the sale as well as the calculation of the UV extinction coefficients of the said lot at the relevant wavelengths and it constituted a direct reaction to *"the allegations of the respondent"* in their reply to the appeal.

This is only convincing in part.

Only the figure shown in D12 (indicating the results of a spectrophotometric analysis of the sold product) can be admitted and considered in the proceedings. The rest of the declaration cannot be admitted. The reasons are as follows:

(a) The same figure as that shown in D12 had been copied into the notice of opposition to demonstrate

the properties of the sold product (see 8.4.2). In their reply to the opposition (see 6.10), the respondent objected that the figure constituted an unsupported allegation.

In the summons to the oral proceedings, which included the opposition division's preliminary opinion, the figure in 8.4.2 of the notice of opposition was implicitly acknowledged as documentary evidence. The opposition division's position also remained unchanged in the impugned decision (see 6.5.5, page 10).

Therefore, the appellant had no reason to doubt that the figure copied into the notice of opposition (8.4.2) was being treated as documentary evidence.

This figure was also then copied into the statement of grounds of appeal (7.4.4, page 17), to which the respondent objected once again on the grounds that the figure amounted to an unsupported allegation.

A figure merely copied into the notice of opposition and/or the statement of grounds of appeal does not generally meet the required standard of evidence per se, if it is not supported by documentary evidence, unless this is uncontested by the other party.

However, under the specific circumstances of the present case, in particular in view of the opposition division's position, the appellant had no reason to file the figure shown in D12 as a separate piece of evidence. Therefore, its submission at the current stage constitutes a

permissible reaction to the respondent's arguments.

(b) The situation is different for the other disputed issues touched upon in D12, particularly the circumstances of the sale, the path length used in the figure and the question of which of the three curves/graphs shown in the figure is relevant for the calculation of the extinction coefficients of the product.

These issues had already been addressed in the opposition division's preliminary opinion (5.1.16), which reached an unfavourable conclusion for the appellant. The preliminary opinion was subsequently confirmed in the decision under appeal (6.5.8).

Therefore, the evidence provided in D12 concerning the issues should already have been filed in the opposition proceedings.

There is no apparent reason which could justify admittance of the evidence concerning these issues at this stage of the proceedings (Art. 13(1) and 12(6), second sentence, RPBA).

1.2 Circumstances of the prior sale

1.2.1 The appellant argued in the notice of opposition (8.4.1) and in the statement of grounds of appeal (7.4.2) that they had purchased approximately 10 tonnes of a product containing various lot numbers, including Lot 0537002, from Kemira Pigments Oy before the patent in suit's priority date. This product met the parameters specified in claim 1, thus meaning that this claim was not novel.
The appellant provided, as evidence, an order

confirmation (D8) and a certificate of analysis (D9).

Furthermore, the appellant submitted in the notice of opposition that Kemira Pigments Oy had conducted a spectrophotometric analysis to demonstrate the properties of the sold product.

1.2.2 The respondent did not contest the sale as such, neither in the opposition proceedings nor in the appeal proceedings. Concerning the circumstances of the sale, the respondent argued that it had not been shown that the sale did not involve a confidentiality agreement. When setting up a pilot plant designed for producing hundreds of tonnes, 10 tonnes constituted a reasonable test batch, i.e., entirely for internal purposes. Moreover, the path length, essential for the computation of the extinction coefficient, had not been indicated in the measurement results (reply to the opposition, 6.9 to 6.13; reply to the appeal, 4.17 to 4.23). Path lengths of 0.5 cm and 2 cm were also commonly used. Neither the measuring device nor the applicable standard prescribed a specific path length. Instead, the cuvette size was to be selected based on the expected absorbance, not the volume of sample available. A path length of 0.5 cm was entirely reasonable. Such cuvettes were readily available.
Moreover, it was unclear which of the data sets represented in the spectrophotometric-analysis figure had been used to calculate the values in the table in 7.4.7 of the statement of grounds of appeal (8.4.3 of the notice of opposition). It could not be assumed that the estimates were completely meaningless, as was alleged by the appellant.
Furthermore, the concentration used for the calculation was unclear because the graph showed inconsistent numbers.

Moreover, no supporting evidence was provided for the point in time when the graph had been generated. Finally, neither the method nor the apparatus used to obtain the data contained in the graph was specified. Therefore, the appellant did not prove the alleged fact "beyond reasonable doubt". In other words, since there remained "a 'grey area', then the case of anticipation based on such a document has to fail".

1.2.3 The results of spectrophotometric analysis as referred to by the parties can be found in the figure of 8.4.2 of the notice of opposition and in the figure of 7.4.4 on page 17 of the statement of grounds of appeal as well as (now) in the figure on page 3 of D12.

1.2.4 There is no need to give a final opinion on the questions of which standard of proof to apply, whether different standards of proof should be even applied in proceedings before the boards, depending on the context, and whether "proof beyond reasonable doubt" could ever be the right yardstick.

1.2.5 The decisive question is not whether the evidence could be more complete but, instead, whether - on the basis of the evidence as a whole - the deciding body is convinced by the alleged facts when applying the principle of free evaluation of evidence (T 2463/22, Reasons 4.5; T 1138/20, Reasons 1.2; T 733/23, Reasons 3.2; T 1634/17, Reasons 19; see also T 832/22, Reasons 3.2, for some more general observations on the standard of proof).

In the course of such evaluation the board has to take into account the probative value of the relevant pieces of evidence under the given circumstances and also in view of the fact that the certificate of analysis (D9)

is only accessible to the appellant, the order confirmation (D8) is only accessible to the appellant and Kemira Pigments Oy (which is not party to the proceedings) and also in view of the fact that the spectrophotometric-analysis figure that was prepared by Kemira Pigments Oy.

In the present case, the circumstances to take into account are as follows:

confidentiality agreement

In the absence of any indications to the contrary, a secrecy agreement cannot be presumed to be included in the sale of this large amount (10 metric tonnes) of titanium dioxide particles. There is no indication that Lot 0537002 was intended for the appellant's internal experimentation or for trial purposes only, including pilot plants, under conditions of implicit confidentiality.
In particular, there is no evidence that the appellant operates a plant producing hundreds of tonnes of this or similar products even if - and contrary to the respondent's viewpoint - 10 metric tonnes is not a reasonable test batch.

Path length

The spectrophotometric-analysis figure shows the absorbance spectrum of the sold product.
To calculate the extinction coefficient (E_λ), the absorbance at a certain wavelength (A_λ) must be divided by the concentration (c) of the particles in the sample and the path length (l) through the sample ($E_\lambda=A_\lambda/(c\times l)$; Beer-Lambert Law).
The path length (l) is not indicated in the spectrophotometric-analysis output.
While there are also cuvettes allowing for both a

longer and a shorter path length, a path length of 1 cm is the widely used standard for such measurements. As the measured absorbance depends on both the path length and the concentration of the sample in the dispersion, the result of the absorbance measurement would lack technical meaning without knowledge of these parameters. While the concentration of the sample is indicated in the spectrophotometric-analysis figure, no such information is provided for the path length. In the absence of any indication to the contrary, the skilled person would therefore expect the use of a standard cuvette (1 cm path length) and, accordingly, they would expect any deviation from this standard to be explicitly stated in the test report. In other words, if a cuvette providing a path length other than 1 cm had been used when carrying out the spectrophotometric analysis, as alleged by the respondent, the skilled person would expect the test report to specify the path length explicitly in the same way as the concentration.

Given that Kemira Pigments Oy produces titanium dioxide particles on an industrial scale, thereby providing an ample supply of the product for testing, the use of a smaller cuvette (and thus a shorter path length), due to a shortage of material, can also be ruled out.

The respondent further argued that the selection had been made to ensure that the absorbance fell within the measurable range.
Indeed, there are essentially two ways of changing the sample parameters to adjust the absorbance of the sample to within the measurable range: adjusting the concentration or adjusting the cuvette size, i.e. the path length. However, the respondent has not explained why, in such a case, it would not have been necessary

to report the use of a different cuvette (path length) in the results.

In view of the above, the board is convinced that the path length used in the spectrophotometric analysis was 1 cm.

Estimates

The spectrophotometric-analysis figure contains three graphs, two involving estimates and the third involving measured results.
Since the figure relates to the measurement of real particles, it is immediately clear that the "measured" curve was used to calculate the values in the table in 7.4.7 of the statement of grounds of appeal. It is also clear that no other curve/graph could be used for this purpose, as they are all based on estimates.
The mere fact that these curves are also present in the spectrophotometric analysis does not explain why the skilled person would consider an estimate when determining the absorbance of the measured sample.

Concentration

It is not decisive, for the result to be within the claimed range, whether a concentration of 10.0 or 10.75 mg/l was used when to calculate the extinction coefficients.

Time and apparatus

The spectrophotometric-analysis figure indicates a specific date and time of measurement. The presence of the figure in the declaration made by Esa Latva-Nirva confirms its authenticity.
There is no evidence that the measurement device used for producing the spectrophotometric analysis was decisive, i.e. that the results would have differed to

such an extent when using a different measurement device that they fell outside of the claimed range.

Consequently, Lot 0537002 has extinction coefficients E_{524} of about 8, E_{360} of about 32 and E_{308} of about 50, which result in E_{360}/E_{308} of about 0.65, thus falling within the range of claim 3 of the main request.

1.2.6 As a consequence, claim 3 of the main request lacks novelty.

2. Auxiliary requests 2 to 5, novelty

With claim 2 of auxiliary request 2, claim 3 of auxiliary requests 3 and 4 as well as claim 1 of auxiliary request 5 being identical to claim 3 of the main request, the above conclusion applies equally to auxiliary requests 2 to 5.

3. Auxiliary request 1, claim 1, clarity, Art. 84 EPC

3.1 The references to the description in claim 1 of auxiliary request 1 give rise to a lack of clarity.

Paragraphs [0070] and [0071] of the patent in suit do not describe a single, unambiguous method. Instead, they disclose two different methods for preparing a dispersion to be measured by the Brookhaven BI-XDC particle sizer. The first method uses an organic-liquid dispersion and involves milling the titanium dioxide powder for 15 minutes, while the second method uses an aqueous dispersion and involves milling the powder for a period of 65 minutes.

Example 1 uses an organic-liquid dispersion and a milling time of 15 minutes, while Example 5 uses an aqueous dispersion and a milling time of 65 minutes. No results were reported for Example 5. Therefore, the patent in suit does not demonstrate that these differences would not impact the outcome.

Moreover, the difference between the two methods is not trivial. The parameter *"median volume particle diameter"* also depends on the state of agglomeration or aggregation of the TiO_2 crystals in the dispersion. Milling is a (key) process capable of breaking down the agglomerates or aggregates of crystals.

3.2 Even if, as argued by the respondent, an organic-liquid dispersion required less milling than an aqueous dispersion, it has not been shown that the two measurement methods described in paragraphs [0070] and [0071] inevitably yield the same result for the same starting material, as alleged by the respondent.

The respondent has provided no evidence to this effect. In the absence of such evidence, and given the significant technical differences between the methods, this renders the claim unclear.

3.3 The respondent also argued that, even if there were a different outcome, the skilled person would simply try both methods. According to the respondent, claim 1 related to a particle sample in the case where one of these methods delivered a result falling within the claimed range.

However, claim 1 does not require that, when measuring with the methods described in the description, at least one method has to yield results falling within the

claimed range. It states that the method according to the description is to be used. The procedure described by the respondent is the workaround that the skilled person has to find if a claim lacks a clear definition.

It does not overcome, however, the fact that the skilled person is left in doubt as to the limits of the claim. A product could fall within the claimed *"median volume particle diameter"* with one method and not do so with the other method.

Since this lack of clarity results from an amendment during the opposition/appeal proceedings, the requirements of Art. 84 EPC are to be examined. They are not fulfilled here.

4. Auxiliary request 6, claim 1, clarity

With claim 1 of auxiliary request 6 being identical to claim 1 of auxiliary request 1, the above conclusions also apply.

5. Admission and consideration of auxiliary requests 7 to 9, Art. 13(2) RPBA

Auxiliary requests 7 to 9 were filed at the end of the oral proceedings before the board. Their admission is therefore governed by Art. 13(2) RPBA.

5.1 The respondent submitted the following arguments in support of the presence of exceptional circumstances:

Auxiliary request 7: Art. 54 EPC was no longer at issue; the amendment consisted merely in the deletion of claim 3 and did not give rise to any new issues.

Auxiliary request 8: the amendments were intended to address the board's concerns regarding added subject-matter.

Auxiliary request 9: the amendments introduced no new features but, instead, were limited to deletions and did not therefore give rise to any new issues.

6. These reasons do not constitute exceptional circumstances. While it is true that there is case law recognising that the mere deletion of disputed subject-matter may constitute exceptional circumstances, including the deletion of claims during the oral proceedings before the board, this conclusion is regularly tied to a considerable promotion of procedural economy through the deletion (e.g. T 1800/21, Reasons 3.4.3). As a rule, this requires the remaining subject-matter to no longer be in dispute and to be clearly allowable.

In the present case, however, the new requests do not amount to a mere deletion of the disputed subject-matter. Instead, the objections already on file remain applicable to the remaining claims.

In particular, claim 1 of auxiliary request 7, which is identical to claim 1 of the main request, remains subject to the objections under Art. 123(2) and Art. 83 EPC (see statement of grounds of appeal, pages 7f.; preliminary opinion of the board, 1.1; statement of grounds of appeal, page 9).

Claim 1 of auxiliary request 8, which is identical to claim 1 of auxiliary request 2, remains likewise subject to the objections under Art. 123(2) and Art. 83 EPC (see preliminary opinion of

the board, 3.1; statement of grounds of appeal, page 9).

Claim 1 of auxiliary request 9, which is identical to claim 4 of the main request, remains subject to the objection under Art. 83 EPC and a request for this attack not to be admitted (see statement of grounds of appeal, page 9; reply to the appeal, 2.2).

Moreover, by submitting these requests in addition to all other requests on file, and only after the latter had been discussed during the oral proceedings, the appellant introduced further fallback positions that had not previously been part of the proceedings. This does not promote procedural economy but, instead, prolongs the proceedings rather than bringing them to a swift conclusion. Considering the requests would also be at odds with the right of the appellant to fair proceedings, likewise being an essential cornerstone for the exercising of discretion as to how to consider requests (see T 20/25, Reasons 3.2).

No other reasons for acknowledging exceptional circumstances are apparent and none were not invoked by the respondent.

In the absence of exceptional circumstances, auxiliary requests 7 to 9 cannot therefore be taken into account, pursuant to Art. 13(2) RPBA.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chair:

C. Vodz R. Winkelhofer

Decision electronically authenticated