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**Datasheet for the decision
of 2 July 2024**

Case Number: T 0351/23 - 3.2.07

Application Number: 10834962.2

Publication Number: 2507013

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C09K3/14, B24D11/00

Language of the proceedings: EN

Title of invention:
DUAL TAPERED SHAPED ABRASIVE PARTICLES

Patent Proprietor:
3M Innovative Properties Company

Opponent:
Saint-Gobain Abrasives, Inc.

Headword:

Relevant legal provisions:
EPC Art. 100(a), 100(b), 100(c)
RPBA 2020 Art. 12(6)

Keyword:

Sufficiency of disclosure - (yes)
Amendments - added subject-matter (no)
Late-filed objection - admitted (no)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

G 0001/03, T 0748/91

Catchword:



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Case Number: T 0351/23 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 2 July 2024

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
20 December 2022 concerning maintenance of the
European Patent No. 2507013 in amended form.**

Composition of the Board:

Chairman G. Patton
Members: V. Bevilacqua
Y. Podbielski

Summary of Facts and Submissions

I. Appeals were filed by the patent proprietor and by the opponent against the decision of the opposition division to maintain European patent No. EP 2 507 013 in amended form according to auxiliary request 1, filed during the oral proceedings.

Since both the opponent and the patent proprietor lodged an appeal against the opposition division's interlocutory decision, the parties will continue to be referred to below as the "opponent" and the "patent proprietor", in order to ensure optimum readability.

II. The following documents, mentioned in the appealed decision, will be referred to in the present decision:

D1: US 3,808,747
D2: WO 01/83166 A1
D3: EP 1 081 206 A1

III. The patent proprietor requested

- that the decision under appeal be set aside and that the patent be maintained as granted (main request) or, alternatively,
- that the appeal of the opponent be dismissed, and the patent be maintained in amended form according to auxiliary request 1, considered by the opposition division to satisfy the requirements of the EPC or, as a further alternative,
- that the patent be maintained in amended form according to one of the following auxiliary requests:

auxiliary requests 1A to 8D filed with the reply to the opponent's statement setting out the grounds of appeal.

The opponent requested

- that the decision under appeal be set aside and
- that the patent be revoked.

IV. In preparation for oral proceedings, the board gave its preliminary opinion in a communication under Article 15(1) RPBA, according to which the appeal of the opponent would be dismissed and the main request of the patent proprietor would be allowed.

V. With a letter dated 8 May 2024 the patent proprietor submitted further arguments in support of its main request.

VI. With a letter dated 27 June 2024 the opponent also reacted to the communication of the board.

VII. Oral proceedings before the board took place on 2 July 2024.

At the conclusion of the proceedings, the order of the present decision was announced.

Further details of the proceedings can be found in the minutes.

The arguments of the parties are dealt with in detail in the reasons for the decision.

VIII. Independent claim 1 of the **main request** (patent as granted) reads as follows:

"Shaped abrasive particles comprising alpha alumina and having a first side, a second side, a maximum length along a longitudinal axis and a maximum width transverse to the longitudinal axis; the first side comprising a quadrilateral having four edges and four vertices with the quadrilateral selected from the group consisting of a rhombus, a rhomboid, a kite, and a superellipse; wherein an aspect ratio of the maximum length divided by the maximum width is 1.3 or greater, and wherein the longitudinal axis extends between a pair of opposing vertices of the first side."

The text of the independent claims of the auxiliary requests is not relevant to the present decision.

Reasons for the Decision

1. Main request, sufficiency of disclosure

1.1 The opposition division found that the patent in suit meets the requirements of sufficiency of disclosure under Article 100(b) EPC.

The opposition division explained that the skilled person would be able to put the invention into practice across the whole scope of the claim, excluding non-working embodiments, as paragraph [0022] of the description provides guidance that aspect ratios should not be too high, in order to avoid fragility (appealed decision, point II.24).

The opposition division also found that paragraph [0023] of the patent in suit provides sufficient guidance to the skilled person regarding the design of particles with slightly truncated vertices (appealed decision, points II.26 to II.28).

The opposition division also found that the examples given are sufficient to support the granted claim 1 and that the description and figures provide a clear teaching to the skilled person regarding all claimed quadrilaterals (appealed decision, point II.30).

1.2 The opponent contests the above findings of the appealed decision, arguing as follows.

1.2.1 Firstly, the opponent argues that claim 1 of the main request encompasses embodiments with very high aspect ratios, which - according to paragraph [0022] of the

patent - would make the particles too fragile.

As the presence of non-working embodiments is contrary to the requirements of Article 83 EPC, the ground of opposition of Article 100(b) EPC holds against claim 1 of the main request.

In this context the opponent also argues that, while paragraph [0022] indicates the existence of an upper limit of the aspect ratio, the value of this limit is neither indicated in claim 1 nor disclosed in the description.

Therefore, the skilled person can only determine which values of the parameter "aspect ratio" lead to non-working embodiments on a case by case basis by performing experiments in each possible working condition, which is something which clearly amounts to an undue burden.

- 1.2.2 Secondly, the opponent submits that, while claim 1 allows one or more vertices of the shaped particles to be slightly truncated, the way in which paragraph [0023] defines this truncation - namely as being based on "imaginary vertices" which can be determined on the basis of arbitrary considerations - does not enable the skilled person to unequivocally determine, starting from a particular particle, the value of the parameter "aspect ratio".

This ambiguity affects the whole scope of the claimed subject-matter, because a skilled person is faced with a situation in which they are unable to determine whether a particular set of particles constitute an embodiment of the invention or not.

1.2.3 Finally, the opponent submits that examples with only one quadrilateral, rhomboid shape are insufficient to support claims encompassing all claimed shapes. The description does not provide the necessary information to obtain substantially all claimed embodiments, contrary to the established case law regarding sufficiency of disclosure. The provision of more examples and technical details is necessary to support the breadth of the claims.

1.3 The board disagrees, for the following reasons.

1.3.1 The first objection of the opponent is not convincing. The skilled person has at their disposal, in the specification, adequate information leading necessarily and directly to success through evaluation of initial failed attempts to carry out the invention.

Extensive experimentation is not necessary to verify whether an embodiment has an excessively high aspect ratio. Indeed, in such a case, the particles simply break, as taught in paragraph [0022] of the patent in suit.

A reasonable degree of trial and error is permissible when it comes to sufficiency of disclosure (Case Law of the Boards of Appeal, 10th edition 2022, "CLB" below, II.C.6.7).

The skilled person would therefore still be able to carry out the invention without undue burden even if, in the case of increased aspect ratios, the particles were more fragile or even excessively fragile, for some applications.

1.3.2 Regarding vertex truncation (second objection - see 1.2.2 above), the board does not accept that paragraph [0023] provides a teaching which is so ambiguous that sufficiency of disclosure of the whole claimed subject-matter is affected.

This is because the alleged lack of clarity and arbitrariness of paragraph [0023] identified by the opponent are immediately resolved when a skilled reader looks at figure 1 of the patent in suit, to which this paragraph refers.

The opponent also failed to provide verifiable facts showing that the combined teaching of paragraph [0023] and figure 1 cannot be carried out by a skilled person.

In this respect the board points out that, according to the established case law, an objection of lack of sufficiency of disclosure presupposes that there are serious doubts substantiated by verifiable facts and that the burden of proof is upon the opponent to establish on the balance of probabilities that a skilled reader of the patent, using their common general knowledge, would be unable to carry out the invention (CLB, II.C.9, first paragraph, with further references).

In relation to the objection that a skilled person would be faced with a situation in which they are unable to determine whether a particular embodiment falls within the forbidden area of the claim, the board notes as follows.

The board agrees with the clearly predominant opinion in the case law (CLB II.C.8.2.2 a), b) and c)) that the definition of the "forbidden area of the claim" should

not be considered as a matter related to sufficiency of disclosure.

- 1.3.3 The third objection, summarised in point 1.2.3 above, is also not convincing.

The arguments of the opponent simply illustrate that the scope of claim 1 is broad.

However, the broad scope of a claim is not, by itself, a reason justifying the skilled person's inability to carry out the invention.

The opponent's reference to the case law is not sufficient to demonstrate that the decision of the opposition division is incorrect, since no evidence has been provided to conclusively show that the skilled person would be unable to reproduce the claimed particles.

Indeed, as stated in decision G 1/03, OJ EPO 2004, 413, point 2.5.2 of the reasons: "*Either there is a large number of conceivable alternatives and the specification contains sufficient information on the relevant criteria for finding appropriate alternatives over the claimed range with reasonable effort. If this is the case, the inclusion of non-working embodiments is of no harm*" (see also CLB, II.C.5.2).

In the present case, the opposition division found that there is no requirement for more than one embodiment, and the opponent failed to provide conclusive evidence to the contrary.

- 1.4 In view of the above, the board sees no reason to set aside the finding of the opposition division that the

ground of opposition of Article 100(b) EPC does not prejudice the maintenance of the patent as granted.

1.5 In its reply to the statement setting out the grounds of appeal submitted by the patent proprietor, the opponent raised, for the first time, a new objection of lack of sufficiency of disclosure. It argued that, if the maximum width were considered not to be linked to the first side, it would no longer be possible to distinguish between the maximum width and the thickness of the particle.

1.6 In relation to this late objection the board notes as follows.

1.6.1 According to Article 12(6), second sentence, RPBA, a board is not to admit objections which should have been submitted in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

In the present case the board is of the opinion that the new objection, which is an objection raised against the patent as granted, should have been submitted with the notice of opposition in order to allow the patent proprietor to react to it and the opposition division to take it into account when deciding on the case.

In the absence of any justifying circumstances being submitted by the opponent, the board thus decides not to admit this objection into the proceedings pursuant to Article 12(6) RPBA.

2. Main request, added subject-matter

2.1 According to the appealed decision, the ground of opposition of Article 100(c) EPC does not prejudice the maintenance of the granted claim 1.

The opposition division found no addition of subject-matter in the added feature

"wherein the longitudinal axis extends between a pair of opposing vertices of the first side",

this feature being originally disclosed on page 6, lines 3 to 6 and 21 to 23, of the application as filed (appealed decision, points II.15 and II.17). It thereby explained that the tapering of the shape towards vertices is not necessarily linked to the amended portion of claim 1 (appealed decision, point II.18).

2.2 The opponent contests the above findings of the appealed decision, arguing as follows.

2.2.1 While the passage on page 6, lines 21 to 23, to which the appealed decision refers, discloses that the longitudinal axis extends between opposing vertices, there is an inextricable "and"-link to the additional requirement for the shape to taper from a transverse axis towards each opposing vertex. By not including this tapering requirement, amended claim 1 forms an intermediate generalisation that is not supported by the application as filed.

Specifically, the opponent submits that, while tapering towards vertices occurs for shapes like a rhombus, it does not necessarily occur for a rhomboid shape. In a rhomboid, the tapering does not necessarily occur

starting from the transverse axis upwards towards the top vertex, contrary to what is required by the application as filed. Therefore, claim 1 as amended covers particle shapes which were not originally disclosed (first objection).

- 2.2.2 Adding the contentious feature to the original claim 1 links the maximum length of the particle to the first side thereof. This means that the first side is the side which determines the limit of the particle's length.

On account of this amendment, the granted claim 1 therefore extends to particles having a maximum width, transverse to the longitudinal axis, as defined in claim 1, lying outside of the plane defined by the first side.

This amounts to an unallowable extension of subject-matter, because the application as filed only discloses embodiments where, if the maximum length of the particle is linked to the first side as now claimed, the maximum width is also in the same plane, e.g. also on the first side 24 (second objection).

- 2.3 The board is not convinced that the the findings of the appealed decision concerning added subject- matter are incorrect.

- 2.3.1 The first objection of the opponent is not convincing, because it is based on a very restrictive interpretation of the feature, mentioned in the original description on page 6, lines 21 to 24, "tapers from the transverse axis toward each opposing major vertex".

It is not correct that "tapering" only occurs if there is a continuous narrowing of the shape already starting from the transverse axis upwards towards the top vertex.

Indeed, there is no apparent reason to conclude that the verb "tapers", when taken in the context of page 6, lines 21 to 24, of the original description, is to be understood as "continuously tapers starting from".

The opponent's interpretation, according to which there is no tapering in a rhomboid shape, is excessively restrictive.

Therefore, the allegedly missing feature "tapers from the transverse axis toward each opposing major vertex", when correctly interpreted, is also present in the subject-matter of the granted claim 1 in view of shapes specified therein, including "rhomboid" shapes.

2.3.2 The second objection of the opponent is not convincing either.

This is due to the fact that the added feature "wherein the longitudinal axis extends between a pair of opposing vertices of the first side" defines the same limitations on the direction of the longitudinal axis as those originally disclosed on page 6, lines 1 to 6. There is no mention in this passage of the original description that the maximum width of the particles also has to be on this first side. The passage mentions the "major vertices" and the "minor vertices" of the first side, but does not contain any information concerning the "maximum width". Therefore, this disclosure provides, in itself, a basis for the added feature.

As a consequence, it is not true that the application as filed only discloses embodiments in which, if the longitudinal axis and therefore also the maximum length lie on the first side, the maximum width also lies on the first side.

Furthermore, it can likewise not be derived from page 6, lines 21 to 24, of the original description that, if the longitudinal axis lies on the first side, the maximum width also lies on the first side.

The fact that the maximum width inevitably lies on the first side of the particle is also not directly and unambiguously derivable from page 6, lines 28 to 31, where the only information given is that the transverse axis, along which the maximum width is to be measured, is perpendicular to the longitudinal axis.

2.4 The ground of opposition of Article 100(c) EPC does not therefore prejudice the maintenance of the patent as granted.

3. Main request, novelty over D1

3.1 The opposition division found that claim 1 is novel over document D1.

The shaped abrasive particles of claim 1 were found to differ from those disclosed in D1 by the claimed aspect ratio, which should be greater than 1.3 (appealed decision, point II.41).

3.2 The opponent contests the above findings, arguing as follows.

- 3.2.1 The opponent argues that an aspect ratio above 1.3, as claimed, is disclosed in column 4, lines 48 to 52, of D1, where a "diamond" shape is mentioned as shown in figure 6.
- 3.2.2 During the oral proceedings the opponent also argued that a skilled reader, looking at figures 1 to 6 of D1, would recognise that this document is mainly directed towards elongated abrasive particles.

Then, looking at the relative dimensions of the "diamond"-shaped particle shown in figure 6 of D1, the skilled person would conclude that an aspect ratio of above 1.3 is also disclosed.

- 3.3 The board is not convinced by the above arguments.
 - 3.3.1 The claimed aspect ratio is not derivable from column 4, lines 48 to 52, of D1, because the expression "diamond" (see line 52) does not imply any specific aspect ratio, let alone the claimed one.
 - 3.3.2 There is also no direct and unambiguous disclosure of this feature in figure 6 of D1.

Generally (CLB, I.C.4.6), schematic drawings cannot be used to derive a ratio between two dimensions.

According to the established case law the fact that a size ratio is shown solely in a drawing of a document is not sufficient to conclude that this feature is unambiguously disclosed.

In the present case, even if the particle of figure 6 is elongated, and the particles of figures 1 to 4 and figure 7 are also elongated, the opponent has not shown

that a technical function achieved by such elongation is derivable from D6. In this respect, as mentioned by the patent proprietor, figure 5 of D1 shows a spherical shape according to the invention disclosed therein. As a consequence, contrary to the opponent's view, no circumstances can be seen in D1 which would allow application of the conclusions of T 748/91, according to which size ratios could be inferred even from a schematic drawing.

For this reason, it is not possible to conclude that this detail of the schematic representation of figure 6 is actually meant to correspond to a technical feature of the particle shown therein rather than being merely an expression of the draughtsman's artistic freedom.

3.3.3 The board therefore concurs with the appealed decision that D1 does not disclose that the shaped abrasive particles have an aspect ratio of 1.3 or greater, and that, already for this reason, the subject-matter of claim 1 of the main request is novel over the content of the disclosure of D1.

4. Main request, novelty over D2

4.1 The opponent also contests the opposition division's finding (appealed decision, point II.44) that the subject-matter of claim 1 of the main request is also novel over the content of the disclosure of document D2.

In particular, the opponent argues that particles with an aspect ratio above 1.3, as claimed, are directly and unambiguously derivable from figures 1 and 2, and from page 10, line 31, of D2.

In this context the opponent relies on the above-mentioned case law regarding drawings (CLB, I.C.4.6).

4.2 The board disagrees.

The claimed aspect ratio is not derivable from page 10, line 31, of D2, where composites which are "diamond shaped" are mentioned, because the expression "diamond shaped" does not imply any specific aspect ratio, let alone the claimed aspect ratio.

Even if the particles of figures 1 and 2 are elongated, according to said established case law (CLB, I.C.4.6) the claimed aspect ratio is not derivable therefrom, due to the schematic nature of these depictions (see also point 3.3.2 above). The opponent's view and allegation that the aspect ratio would implicitly be above 1 and of technical relevance to the disclosure of D2 are not considered by the board to represent circumstances which could justify application of the conclusions of T 748/91, according to which size ratios could be inferred even from a schematic drawing.

4.3 The board therefore concurs with the appealed decision that D2 also does not disclose that the shaped abrasive particles have an aspect ratio of 1.3 or greater, and that, already for this reason, the subject-matter of claim 1 of the main request is novel over the content of the disclosure of D2.

5. Main request, novelty over D3

5.1 The opponent also contested the opposition division's findings (appealed decision, point II.47) that the subject-matter of claim 1 of the main request is novel over the content of the disclosure of document D3

because the latter fails to disclose "shaped" abrasive particles.

In this context the opponent also argues that particles with an aspect ratio above 1.3, as claimed, are directly and unambiguously derivable from paragraph [0012] of D3 disclosing abrasive particles being: "rhomboid with a major axis of about 0.1 to 10 μm and a minor axis (thickness) of about 0.01 to 0.3 μm ".

This is because the dimensions of the major axis and minor axis given in this passage are respectively to be considered as the "maximum length" and the "maximum width" of the particle.

According to the opponent the claimed aspect ratio is disclosed, because, if the maximum length is set at 10 μm , which is a value specifically disclosed in this paragraph, i.e. an end point of the disclosed range to be considered as an embodiment, and this maximum length is divided by any of the values mentioned for the maximum width (0.01 to 0.3 μm), the result is always above 1.3.

5.2 The board disagrees.

D3 describes scaly boehmite particles used as a friction adjustment agent in friction materials. Regarding the shape of these particles, it is stated in paragraph [0012] as follows:

"(2) It is typically in the form of hexagonal plate or rhomboid with a major axis of about 0.1 to 10 μm and a minor axis (thickness) of about 0.01 to 0.3 μm ."

This passage does not contain any information from which it could be derived that the "minor axis" of these rhomboid scaly particles is the largest dimension perpendicular to the major axis, which would correspond to the maximum width, used for calculating the aspect ratio.

Furthermore, as correctly pointed out by the patent proprietor, taking into account the adjective "scaly" (which implies a flat, plate-like shape), the minor axis is not to be interpreted as the width of the rhomboid but, rather, as the smallest dimension of the scale, corresponding to the thickness thereof, as explicitly indicated in brackets.

The maximum width of the abrasive particle is therefore not given in paragraph [0012], as this would be an intermediate dimension, larger than the thickness (minor axis) but smaller than the maximum length (major axis).

This interpretation aligns with the typical characteristics of scaly or plate-like particles, where the thickness is significantly smaller than both the length and the width.

The document's use of "minor axis (thickness)" explicitly equating the minor axis to the thickness, also supports this interpretation.

Therefore, the ranges mentioned in paragraph [0012] of D3 describe the length and thickness of the scaly boehmite, but not the maximum width, which in a scaly particle can differ substantially from the thickness, making it impossible to derive an aspect ratio as

specified in claim 1 from this data.

5.3 The board therefore concurs with the findings of the appealed decision, according to which the subject-matter of claim 1 of the main request is novel over the content of the disclosure of D3.

6. Main request, inventive step

6.1 The subject-matter of the granted claim 1 was found, in the decision under appeal, to lack an inventive step over D1.

The opposition division found that no technical effect was associated with the distinguishing feature identified and discussed above (aspect ratio of 1.3 or greater), and it formulated the problem to be solved as the provision of alternatively shaped abrasive particles.

The claimed aspect ratio was seen to be an arbitrary selection not conferring inventiveness (appealed decision, from II.53 to II.57).

6.2 The patent proprietor contests the above findings, thereby explaining its view that the opposition division misunderstood the claim and overlooked paragraphs [0006], [0021] and [0022] of the patent in suit. The patent proprietor also submitted that there is an effect attributable to the aspect ratio over 1.3, because the elongated particles can be oriented in an electrostatic field with a vertex exposed to the grinding face of an abrasive article to which it is applied, thereby solving the problem, mentioned in the description (paragraph [0005]), of achieving improved grinding performance results.

By incorrectly dismissing this effect and by formulating the problem as the provision of an alternative, the opposition division failed to correctly assess inventive step.

The patent description provides clear technical effects for the claimed aspect ratio, particularly in relation to particle orientation in an electrostatic field. These effects, which are not addressed in D1, support the inventiveness of the shaped abrasive particles claimed.

6.3 The opponent disagrees, and argues that the appealed decision is based upon a correct claim interpretation and a correct formulation of the problem to be solved, starting from the abrasive particle of figure 6 of D1, as the provision of an alternative shape therefor.

6.3.1 The opponent set out during the oral proceedings that none of the effects mentioned in the description of the patent in suit, and in particular none of the effects mentioned in paragraphs [0006], [0021] and [0022], are to be attributed to the claimed aspect ratio:

The parameter "aspect ratio" is, in fact, not even mentioned in paragraphs [0006] and [0021].

The effect mentioned in the sentence contained in paragraph [0022]

"The aspect ratio should be greater than 1.0 for the shaped abrasive particle to taper as desired for improved electrostatic coating"

is also not attributed to the distinguishing feature identified above, as this passage encompasses aspect ratios starting from 1.0.

The same applies to the other (negative) effect mentioned in lines 49 and 50 of this paragraph ("As the aspect ratio becomes too large, the shaped abrasive particle can become too fragile"). No technical effect can be attributed to large aspect ratios compared with D1.

The claimed aspect ratio is not mentioned in the last sentence of paragraph [0022] either. That sentence reads: "*Desirably, the aspect ratio is selected such that a sufficient width and/or thickness of the shaped abrasive particle is buried into the make and size coats to prevent snapping off the very tip of the shaped abrasive particle and shelling the particle from the coated abrasive article.*"

With no effect established, the opposition division correctly defined the objective problem as the mere provision of an alternative particle shape.

- 6.3.2 During the oral proceedings the opponent also criticised the problem formulated by the patent proprietor as how to achieve improved grinding performance, arguing that it is not credible that this result is attainable throughout the entire range covered by claim 1.

This is the case, according to the opponent, because claim 1 also covers two particles, and clearly no grinding can be done with particles only, even less so with such a limited number of particles. The material of the particles is also unspecified, since a particle can contain very small amounts of alpha alumina, which would clearly also be unsuitable for grinding.

6.3.3 According to the opponent a skilled person starting from figure 6 of D1, and seeking to provide a mere alternative thereto, would immediately see that diamond-like particles such as those shown in figure 6, with an aspect ratio of above 1.3, clearly constitute such an obvious alternative, in particular because there is nothing in the teaching of document D1 that teaches away from it.

As a consequence of the above, the skilled person would not need any particular teaching or pointers, and would also have no practical difficulties whatsoever in applying the claimed aspect ratio to this known particle.

In this way the skilled person would arrive at the subject-matter of claim 1 of the main request without having to exercise any inventive skill.

6.4 The patent proprietor convincingly demonstrated that the subject-matter of the granted claim 1 is inventive starting from D1, for the following reasons.

6.4.1 According to the established case law (CLB, I.D.4.4.2), the patent proprietor may be allowed to put forward a modified version of the problem as formulated in the patent in suit if the issue of inventiveness has to be considered on an objective basis against a new prior art, such as D1, which comes closer to the invention than that considered in the granted patent specification.

As a matter of principle, any effect provided by the invention can be used as a basis for reformulating the technical problem, as long as that effect is derivable

by a skilled person.

Paragraphs [0006], [0021] and [0022] of the description of the patent in suit clearly outline the presence of a technical effect associated with elongated particles in an electrostatic field (see, for example, paragraph [0006]: "longer than wide"; and paragraph [0022], line 46: "the aspect ratio should be greater than 1.0").

Such elongated particles, when subjected to an electrostatic field, as is the case during electrostatic coating, are oriented and can be positioned with a vertex exposed towards the grinding face of an abrasive article to which they are applied.

With this orientation, mentioned in paragraph [0006], improved grinding performance is achieved (see paragraph [0005]).

A skilled reader derives from the above-mentioned passages that the effect of orientation in an electrostatic field is achieved when the aspect ratio is 1.3 or greater, as claimed, even if this specific value is not mentioned in these passages.

As discussed above, the presence of an electrostatic field plays a crucial role in achieving the beneficial orientation of the particles.

The appealed decision fails to consider these technical effects. A proper application of the problem-solution approach should have taken into account the effect regarding the orientation of the particles and the problem of improving grinding performance.

The board therefore concurs with the patent proprietor

that, on the basis of this effect, the problem to be solved by the claimed aspect ratio can be formulated as how to achieve improved grinding performance.

The opposition division was therefore wrong to find that there is no effect and that the only contribution of the invention is to propose something different from the prior art. It was also wrong to formulate the problem to be solved as the provision of an alternative.

- 6.4.2 The objections of the opponent against formulating the problem as improving grinding performance (on the grounds that claim 1 relates to particles, also covers only two particles, or particles containing very small amounts of alpha alumina) are not convincing, because they do not specifically address the distinguishing feature (aspect ratio), which is the basis for the formulation of the objective technical problem.
- 6.4.3 To determine whether the claimed invention, starting from the particle shown in figure 6 of D1 and the objective technical problem, would have been obvious to the skilled person, the "could-would approach" (CLB I.D.5) is to be applied.

This means asking not whether the skilled person could have carried out the invention, but whether they would have done so in the expectation of solving the underlying technical problem or in the expectation of some form of improvement or advantage.

In the present case, as discussed above, D1 does not disclose or recommend the claimed aspect ratio of 1.3 or greater.

At best, "diamond" (D1, column 4, line 52) can be understood by the skilled person as generally indicating a rhombus shape.

However, there is no teaching in D1, and no basis in the available evidence related to the common general knowledge, that would prompt the skilled person to provide a diamond shape specifically having an aspect ratio in the claimed range in order to improve grinding performance.

In addition, D1 does not mention any electrostatic effects or improvements in grinding properties related to particle shape and orientation but, instead, focuses on particles used in a work container or tub (see figure 8 and column 4, starting from line 60).

There is therefore no teaching in D1 or in the common general knowledge that would prompt a skilled person to modify this known particle to provide an aspect ratio in the claimed range in order to improve grinding performance.

As a consequence of the above, the subject-matter of claim 1 of the main request involves an inventive step over document D1, taken alone or in combination with the knowledge of the skilled person.

7. Further inventive-step objection

7.1 After the opponent had addressed, in its reply to the statement setting out the grounds of appeal submitted by the patent proprietor, inventive step starting from D1 for the subject-matter of claim 1 of the main request, it wrote in section 5.11 of this letter:

"In principle, similar considerations apply when starting from D2 or D3 which are equally good starting points when following the novelty assessment of the Opposition Division."

During the oral proceedings the opponent confirmed the above statement and failed to submit any additional argument specifically tailored towards D2 or D3 as a starting point.

7.2 The board notes that the feature "the aspect ratio is 1.3 or greater", found to be inventive starting from D1, is discussed neither in D2 nor in D3 (see points 4 and 5 of the present decision).

As a consequence, and in the absence of any counter-arguments being submitted by the opponent, the board finds that the subject-matter of claim 1 of the main request involves an inventive step

- over document D2, taken alone or in combination with the knowledge of the skilled person, and
- over document D3, taken alone or in combination with the knowledge of the skilled person

for the same reasons as those discussed above (see point 6) when taking D1 as the starting point.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:



G. Nachtigall

G. Patton

Decision electronically authenticated