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**Datasheet for the decision  
of 4 March 2025**

**Case Number:** T 0934/23 - 3.3.02

**Application Number:** 18180922.9

**Publication Number:** 3444313

**IPC:** C09K3/14, B24D3/08

**Language of the proceedings:** EN

**Title of invention:**

DISH-SHAPED ABRASIVE PARTICLES WITH A RECESSED SURFACE

**Patent Proprietor:**

3M Innovative Properties Co.

**Opponent:**

Saint-Gobain Abrasives, Inc.

**Relevant legal provisions:**

EPC Art. 76(1), 100(c), 114(1), 123(3)  
RPBA Art. 13(1)

**Keyword:**

Divisional application - added subject-matter  
Amendments - extension of the protection conferred  
Amendment to appeal case

**Decisions cited:**

G 0009/91, G 0010/91



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Case Number: T 0934/23 - 3.3.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.02**  
**of 4 March 2025**

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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
10 March 2023 concerning maintenance of the  
European Patent No. 3444313 in amended form.**

**Composition of the Board:**

**Chairman** P. O'Sullivan  
**Members:** S. Bertrand  
L. Bühler

## Summary of Facts and Submissions

- I. The appeals by the opponent and the patent proprietor are against the opposition division's interlocutory decision that European Patent No 3 444 313 in amended form according to auxiliary request 0", comprising the set of claims filed during the oral proceedings on 8 February 2023, met the requirements of the EPC.
- II. Since the patent proprietor and the opponent are both appellants and respondents in these appeal proceedings, they are referred to as "patent proprietor" and "opponent" in the following.
- III. In the impugned decision, the opposition division's conclusions included that claim 1 of the main request (patent as granted) and auxiliary request 0" did not contain subject-matter which extends beyond the content of the parent application.
- IV. In its statement of grounds of appeal, the opponent contested the opposition division's reasoning in the decision. It submitted *inter alia* that the claims of, auxiliary request 0" did not meet the requirements of Article 76(1) EPC.
- V. In its statement of grounds of appeal, the patent proprietor submitted that the opposition division's finding that claim 6 of the main request contravened Article 76(1) EPC was incorrect. It submitted auxiliary requests 0 to 0"', 1 to 8C, 1<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup> and 1<sup>IV</sup> to 8C<sup>IV</sup>.
- VI. In its reply to the grounds of appeal, the opponent objected to the admittance of the auxiliary requests filed for the first time with the statement of grounds

of appeal. It provided arguments regarding, *inter alia*, added subject-matter.

- VII. In its reply to the grounds of appeal, the patent proprietor filed replacement auxiliary requests 5 to 8C. It provided further submissions regarding the main and auxiliary requests.
- VIII. In further letters, the opponent and the patent proprietor provided further submissions regarding the admittance and the allowability of the auxiliary requests.
- IX. The board summoned the parties to oral proceedings as per their request and issued a communication under Article 15(1) RPBA.
- X. Oral proceedings before the board were held in-person on 4 and 5 March 2025. During oral proceedings, the patent proprietor filed auxiliary requests 4C<sup>(I)</sup>, 4D and 4E.
- XI. The parties' requests, insofar as relevant to the present decision, were as follows.

The patent proprietor requested that the decision under appeal be set aside and the opposition be rejected, alternatively, that the patent be maintained in amended form on the basis of one of the sets of claims of auxiliary requests 0", 0, 0', 0"', 1 to 8C, 1<sup>(I)</sup> to 8C<sup>(I)</sup>, 1<sup>(II)</sup> to 8C<sup>(II)</sup>, 1<sup>(III)</sup> to 8C<sup>(III)</sup>, and 1<sup>(IV)</sup> to 8C<sup>(IV)</sup>, in that order, with auxiliary requests 0, 0', 0", 0"', 1 to 4C, 1<sup>(I)</sup> to 4B<sup>(I)</sup>, 1<sup>(II)</sup> to 4C<sup>(II)</sup>, 1<sup>(III)</sup> to 4C<sup>(III)</sup>, and 1<sup>(IV)</sup> to 4C<sup>(IV)</sup> being filed with the patent proprietor's statement of grounds of appeal, auxiliary requests 5 to 8C, 5<sup>(II)</sup> to 8C<sup>(II)</sup>, 5<sup>(III)</sup> to 8C<sup>(III)</sup>, and 5<sup>(IV)</sup> to 8C<sup>(IV)</sup> being filed with the reply to the

opponent's appeal and auxiliary requests 4C<sup>(I)</sup>, 4D, and 4E being filed during the oral proceedings before the board.

The patent proprietor further requested that the opponent's allegation that there would be a difference between the "perimeter" of the first and second faces and the "geometric shape" of the said faces in combination with the objection regarding feature 1.6 not be admitted into the proceedings.

The opponent requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The opponent further requested that auxiliary requests 0, 0', 0", 0"', 1<sup>(I)</sup> to 8C<sup>(I)</sup>, 1<sup>(IV)</sup> to 8C<sup>(IV)</sup>, 4D, and 4E not be admitted into the proceedings.

XII. The parties' submissions relevant to the decision are referred to in the reasons for the decision below.

## **Reasons for the Decision**

Main request

1. Added subject-matter - Claim 1 - Articles 100(c) and 76(1) EPC
- 1.1 The application underlying European Patent No 3 444 313 is a divisional application of European patent application No. 09 836 622.

In the following and in line with the parties, the board refers to the corresponding published PCT application (WO 2010/077491 A2) for the disclosure of

European patent application No. 09 836 622 (hereinafter "parent application").

1.2 Claim 1 of the main request reads as follows:

"1. Abrasive particles comprising dish-shaped abrasive particles (20);

*each of the dish-shaped abrasive particles having a sidewall (28);*

*each of the dish-shaped abrasive particles (20) comprising alpha alumina; and*

***each of the dish-shaped abrasive particles having a first face (24) and a second face (26) separated by a varying thickness, (T), a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26),***

***wherein the first face (24) and the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face, wherein the perimeter (29) comprises a triangular shape; wherein the first face (24) is recessed and a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00.***" (emphasis added by the board; strike through and bold text representing deletion and addition respectively compared to claim 1 of the parent application).

The parties relied upon the following feature numbering regarding claim 1 of the main request:

1. Abrasive particles comprising dish-shaped abrasive particles (20);

1.1 each of the dish-shaped abrasive particles having a sidewall (28);

1.2 each of the dish-shaped abrasive particles (20) comprising alpha alumina; and

1.3 each of the dish-shaped abrasive particles having a first face (24) and a second face (26) separated by a varying thickness (T),

1.4 a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26),

1.5 wherein the first face (24) and the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face,

1.6 wherein the perimeter (29) comprises a triangular shape;

1.7 wherein the first face (24) is recessed.

1.3 The opponent submitted that claim 1 of the main request contravened Article 76(1) EPC for two reasons. First, feature 1.5 of claim 1 of the main request found no basis in the parent application. Second, the feature "a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00", which was part of claim 1 of the parent application, was omitted from

claim 1 of the main request without any basis for this omission in the parent application.

1.4 Feature 1.5

The patent proprietor submitted that feature 1.5 found basis in each of the first to third embodiments disclosed in the parent application.

1.4.1 The board disagrees for the reasons provided by the opponent.

The claims of the parent application define three separate embodiments of the claimed abrasive particles:

- First embodiment: abrasive particles *inter alia* having a thickness ratio  $T_c/T_i$  between 1.25 and 5.00 as defined in claim 1 of the parent application. It is undisputed that figures 1A, 1B, and 2A to 2C are according to claim 1 of the parent application.
- Second embodiment: abrasive particles *inter alia* having a first face which is convex and a second face which is concave as defined in claim 11 of the parent application (for example as shown in figures 3A, 3B and 4).
- Third embodiment: abrasive particles *inter alia* having a second face which is recessed, as defined in claim 15 of the parent application (for example as shown in figures 6A and 6B).

The three embodiments defined by the independent claims of the parent application are also set out as separate embodiments in the description of the parent application (page 2, lines 12 to 25).

In detail, claims 1 and 7 of the parent application related to the first embodiment read as follows:

*"1. Abrasive particles comprising: dish-shaped abrasive particles each having a sidewall, each of the dish-shaped abrasive particles comprising alpha alumina and having a first face and a second face separated by a varying thickness, T; wherein the first face is recessed and a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00."*

*"7. The abrasive particles of claim 1, 2, 3, or 4 comprising a perimeter of the first face and a perimeter of the second face and wherein the perimeter comprises a triangular shape."*

Claim 1 of the parent application comprises features 1 (abrasive particles comprising dish-shaped abrasive particles (20)), 1.1 (each of the dish-shaped abrasive particles having a sidewall (28)), 1.2 (each of the dish-shaped abrasive particles (20) comprising alpha alumina), 1.3 (each of the dish-shaped abrasive particles having a first face (24) and a second face (26) separated by a varying thickness (T)) and 1.7 (wherein the first face (24) is recessed).

Claim 1 of the parent application does not comprise features 1.4 to 1.6 but comprises the additional feature that *"a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00."*

Claim 7 of the parent application comprises features 1.4 (a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26)) and 1.6 (wherein the perimeter (29) comprises a triangular shape).

It follows that the combination of claims 1 and 7 of the parent application comprises features 1, 1.1. to 1.4, 1.6 and 1.7. This combination does not comprise feature 1.5 of claim 1 of the main request and additionally comprises the feature that "*a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00*", which is absent from claim 1 of the main request.

Claims 11 and 13 of the parent application related to the second embodiment read as follows:

*"11. Abrasive particles comprising: dish-shaped abrasive particles each having a sidewall, each of the dish-shaped abrasive particles comprising alpha alumina and having a first face and a second face separated by a thickness,  $T$ , and wherein the first face is convex and the second face is concave."*

*"13. The abrasive particles of claim 11 or 12 comprising a perimeter of the first face and a perimeter of the second face and wherein the perimeter comprises a triangular shape."*

Claim 11 of the parent application comprises features 1 (abrasive particles comprising dish-shaped abrasive particles (20)), 1.1 (each of the dish-shaped abrasive particles having a sidewall (28)) and 1.2 (each of the dish-shaped abrasive particles (20) comprising alpha alumina). Claim 11 of the parent application does not comprise features 1.3 to 1.7 but comprises the additional feature that "*the first face is convex and the second face is concave.*"

Claim 13 of the parent application comprises features 1.4 (a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26)) and 1.6

(wherein the perimeter (29) comprises a triangular shape).

It follows that the combination of claims 11 and 13 of the parent application comprises features 1, 1.1, 1.2, 1.4 and 1.6. This combination does not comprise features 1.3 (each of the dish-shaped abrasive particles having a first face (24) and a second face (26) separated by a varying thickness (T)), feature 1.5 and feature 1.7 (wherein the first face (24) is recessed) but comprises the additional feature that *"the first face is convex and the second face is concave."*

Claims 15 and 18 of the parent application related to the third embodiment read as follows:

*"15. Abrasive particles comprising: dish-shaped abrasive particles each having a sidewall, each of the dish-shaped abrasive particles comprising alpha alumina and having a first face and a second face separated by a varying thickness, T, and wherein the first face is recessed and the second face is recessed".*

*"18. The abrasive particles of claim 15, 16, or 17 comprising a perimeter of the first face and a perimeter of the second face and wherein the perimeter comprises a triangular shape."*

Thus claim 15 of the parent application comprises features 1 (abrasive particles comprising dish-shaped abrasive particles), 1.1 (each of the dish-shaped abrasive particles having a sidewall), 1.2 (each of the dish-shaped abrasive particles comprising alpha alumina), 1.3 (each of the dish-shaped abrasive particles having a first face and a second face separated by a varying thickness (T)) and 1.7 (wherein the first face is recessed). Claim 15 of the parent

application does not comprise features 1.4 to 1.6 but comprises the additional feature that the second face is recessed.

Claim 18 of the parent application comprises features 1.4 (a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26)) and 1.6 (wherein the perimeter (29) comprises a triangular shape).

In view of the above, the combination of claims 15 and 18 of the parent application comprises features 1, 1.1. to 1.4, 1.6 and 1.7. This combination does not comprise feature 1.5 and comprises additionally the feature that the second face is recessed.

1.4.2 The patent proprietor argued that basis for feature 1.5 in claim 1 was directly and unambiguously derivable from the description of the parent application related to all three claimed embodiments, namely for the first embodiment of claim 1 on page 5, lines 14 to 19, for the second embodiment of claim 11 on page 11, lines 5 to 11, and for the third embodiment of claim 15 on page 13, lines 8 to 13 as well as in figures 6A and 6B of the parent application.

1.4.3 The board is not convinced for the following reasons.

The passage on page 5, lines 14 to 19 of the parent application is part of the disclosure related to figures 1A to 1C and 2A to 2C in the description (page 4, line 27 to page 5, line 22), i.e. it belongs to the disclosure of the first embodiment of the parent application (according to claim 1 of the parent application). The passage in its entirety reads as follows:

*"The sidewall 28 of the dish-shaped abrasive particle 20 can vary in shape and it forms a perimeter 29 of the first face and a perimeter 29 of the second face. In one embodiment, the perimeter 29 of the first face 24 and second face 26 is selected to be a geometric shape, and **the first face 24 and the second face 26 are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face**" (emphasis added by the board).*

The text in bold above is identical to feature 1.5 present in claim 1 of the main request.

However, as stated by the opponent, this passage stipulates that the perimeter 29 is formed by the sidewall. It follows therefore that feature 1.5 of claim 1 is inextricably linked to the teaching in the parent application that the sidewall forms the perimeter of the first and second faces. Since this feature is absent from claim 1, feature 1.5 represents an unallowable generalisation of the parent application.

In this regard, the patent proprietor's position that feature 1.5 is not limited to the first embodiment would not appear relevant. In particular, the only other passage of the parent application in which the text of feature 1.5 is included is in relation to the second embodiment on page 11, lines 5 to 9. This passage is however identical to the passage set out above on page 5, lines 14 to 19 in relation to the first embodiment, and hence the same conclusions apply as set out above.

Additionally, and independently of the above issue, as stated by the opponent, the second embodiment of claim 11 of the parent application as depicted in figures 3A,

3B, 3C, and 4 cannot serve as a basis for feature 1.5 for the reason that this embodiment requires a constant thickness between the faces: this is apparent from the definite article used in claim 11 in relation to "a thickness T", supported by the description, page 11, line 1, in which the sidewall 28 is stated as having "a thickness T", and figures 3A, 3B, and 3C, all of which appear to depict an abrasive particle with a non-variable thickness. In contrast, claim 1 of the main request requires "a varying thickness" (feature 1.3).

Similarly, as noted by the opponent, basis for feature 1.5 is not provided by the passages of the description of the parent application related to the third embodiment of claim 15. The patent proprietor referred to page 13, lines 8 to 13 related to the third embodiment. This passage reads as follows:

*"[f]or any of the discussed embodiments, the dish-shaped abrasive particles 20 can have various three-dimensional shapes. The geometric shape of the perimeter 29 can be triangular, rectangular, circular, elliptical, star-shaped or that of other regular or irregular polygons. In one embodiment, an equilateral triangle is used and in another embodiment, an isosceles triangle is used".*

This passage does not comprise the text of feature 1.5 of claim 1, and neither was it explained by the patent proprietor why it would implicitly have the same meaning. It therefore does not represent a direct and unambiguous disclosure of feature 1.5, *a fortiori* due to the absence of the text including feature 1.5 as set out above for the first and second embodiments.

- 1.4.4 The patent proprietor also argued that dependent claims 7 and 18 of the parent application provided basis for the absence in feature 1.5 of the requirement that the perimeters are to be formed by the sidewall: these claims stipulated that the perimeters of the first and second faces have the same triangular geometric shape, without further requiring said perimeters to be formed by the sidewall.

This argument is not convincing at least for the reason that even if the combination of claims 1 and 7 of the parent application does not require that the sidewall be formed by the perimeters, this requirement must be imposed as soon as features derived from page 5, lines 15-20 of the parent application as filed serve as a basis for present claim 1. Specifically, said features are inextricably linked to said requirement as set out above.

- 1.4.5 The patent proprietor further argued that feature 1.5 found basis in figures 6A and 6B related to the third embodiment, in combination with dependent claims 7 and 18 related to the first and third embodiments, respectively, which specified that the perimeter of the first and second face comprises a triangular shape.

The board does not agree for the reasons provided by the opponent. Specifically, and as addressed above, feature 1.5 requires that the first and second *faces* have the same geometric shape. Although both faces as depicted in figure 6A, but more visible in figure 6B, are concave, they are not concave to the same extent, or in the same manner: in the abrasive particle depicted, the surface of the upper face curves to the edge of the face, while on the lower face, an angular (abrupt) change of direction occurs on approach to the edge of the face. Hence, the geometric shape of the

faces depicted in figure 6B is not the same, as required by feature 1.5, with the consequence that figures 6A and 6B cannot provide basis for feature 1.5. A further consequence of this observation is that given the absence of a literal basis in the parent application for feature 1.5 in relation to the third embodiment as set out above, and the above observation that figures 6A and 6B do not meet the requirements of feature 1.5, there is no reason to conclude that feature 1.5 is applicable to all disclosed embodiments in the parent application, as argued by the patent proprietor.

Finally, as argued by the opponent, there is a further reason why the second and third embodiments as set out above and defined in independent claims 11 and 15 of the parent application cannot serve as a basis for claim 1 - and therefore by extension for feature 1.5, because both embodiments comprise further features absent from claim 1 of the main request.

More specifically, independent claim 11 requires that the first face is convex and the second face is concave. There is no indication in the parent application according to which this feature is not essential and can be omitted, and indeed this feature is apparent in figure 3A, 3B and 3C, in which this embodiment is depicted.

Independent claim 15 on the other hand requires that the second face is recessed. Again, there is no indication in the parent application according to which this feature is not essential, and therefore can be omitted from the third embodiment, and indeed this feature is apparent in the abrasive particles depicted in figures 6A and 6B related to the third embodiment.

Since these features of claims 11 or 15 of the parent application are absent from claim 1 of the main request, also for this reason, the second or third embodiments set out in the parent application cannot serve as basis for claim 1 of the main request.

The board notes that not only does the parent application teach that said features are part of the second and third embodiments, it also teaches that said features are not part of the first embodiment defined in claim 1 of the parent application, and are accordingly absent in figures 1A, 1B, 1C, 2A, 2B, or 2C in which the first embodiment is depicted. Hence, on a general level, it is apparent that the parent application discloses three separate embodiments which include distinct and unrelated technical features differentiating them from each other.

1.4.6 It follows that feature 1.5 of claim 1 does not find basis in the parent application.

1.5 The omission in claim 1 of the thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles

The opponent argued that the feature "a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles is between 1.25 to 5.00" (hereinafter the "thickness feature"), which was part of claim 1 of the parent application, was omitted from claim 1 of the main request without any basis for this omission in the parent application.

As stated above in relation to feature 1.5, the second and third embodiments related to independent claims 11 and 15 of the parent application cannot serve as basis for claim 1 of the main request. Hence, in principle, basis for claim 1 of the main request can only potentially be derived from claim 1 and related

disclosures of the parent application concerned with the first embodiment.

The patent proprietor argued that the omission of the thickness feature found basis in the general effect described in the application as filed, for which the thickness feature was not required.

The board disagrees. The general effect referred to by the patent proprietor concerns a passage on page 1, lines 20 to 22 of the parent application, in which it is stated that "*[t]he inventors have discovered that by making the abrasive particle dish-shaped with either a recessed or concave surface unexpectedly grinding benefits occur*". As stated by the opponent, apart from "dish-shaped", this passage does not disclose any of the features of claim 1 related to the first embodiment, and hence cannot serve as a basis for broadening claim 1 to omit the thickness feature.

The patent proprietor also referred to the passage on page 4, lines 26 et seq. of the parent application as basis for the omission. However, as stated by the opponent, by reference on page 4, line 27 to figures 1A, 1B, and 1C, this passage explicitly relates to the first embodiment. The first embodiment is however in turn referred to earlier in the parent application as including the thickness feature (page 2, lines 12 to 16), and indeed the passage cited by the patent proprietor indicates this by stating than "*T<sub>m</sub> is less than T<sub>c</sub>*" (page 5, line 6). Similarly, page 5, lines 24 to 28, by reference to figures "2A-2C" also unambiguously refers to the first embodiment. The non-optional nature of the thickness feature in relation to the first embodiment is also implied on page 6, lines 6 and 7, which although not mentioning the ratio in claim 1, states that the thickness at the points or corners

tends to be greater than the thickness of the interior. Finally, in agreement with the opponent, the non-optional nature of the thickness feature is also implied on page 7, lines 17 to 23 in which the thickness ratios of the particles of the invention are contrasted with those of the prior art. Hence, these disclosures in the description of the parent application cannot serve as basis for the omission of the thickness feature in claim 1 of the main request.

The patent proprietor further argued that the omission of the thickness feature found basis in claims 1 and 15 of the parent application, which in view of the change in the last recited feature, would clearly indicate to the skilled person that the  $T_c/T_i$  ratio (for claim 1) and the feature that the second face is recessed are not essential to the invention.

The board disagrees. As stated by the opponent, such an argument is not in line with the gold standard. Claim 15 indeed discloses an embodiment which does not require the thickness feature, however it requires an alternative feature which is not present in claim 1 of the main request. Hence, it cannot serve as basis for the omission of the thickness feature. This omission therefore represents a generalisation of the first embodiment set out in claim 1 of the parent application which does not find any basis therein.

It follows that the omission of the thickness feature in claim 1 of the main request does not find basis in the parent application, contrary to the requirements of Article 76(1) EPC.

1.6 For these reasons, the ground for opposition under Article 100 (c) EPC in combination with

Article 76(1) EPC prejudices maintenance of the patent as granted.

Auxiliary request 4C<sup>(I)</sup>

2. Admittance of the opponent's allegation of fact that there would be a difference between the "perimeter" of the first and second faces and the "geometric shape" of the said faces, in combination with the objection that "comprising triangles" in feature 1.6 was not disclosed in the parent application in combination with feature 1.5

2.1 In its further letter dated 8 May 2024, filed in reaction to the patent proprietor's reply to the opponent's appeal, the opponent submitted that the "perimeter" of the first and second faces had to be differentiated from the "geometric shape" of the said faces. This submission was made in the general context of the extension of subject-matter of claim 1 of the main request (points 3.7.6 and 3.7.7 of said letter). During the oral proceedings before the board and the discussion of added subject-matter of claim 1 of auxiliary request 4C<sup>(I)</sup>, the opponent relied on the above submission and the objection that feature 1.6 ("wherein the perimeter (29) comprises a triangular shape") was not disclosed in combination with feature 1.5 in the parent application, in particular on page 5, lines 14 to 20.

2.2 The patent proprietor requested that the opponent's allegation of fact in combination with the objection regarding feature 1.6 not be admitted into the proceedings.

2.3 During the oral proceedings before the board, it was a matter of dispute between the parties whether feature 1.6 ("wherein the perimeter (29) comprises a triangular

shape") was disclosed in the parent application as filed in combination with feature 1.5 of claim 1 and in this context, whether the geometric shape of the first and second face was defined by their respective (triangular) perimeter. The admittance of the opponent's allegation of fact that there would be a difference between the "perimeter" of the first and second faces and the "geometric shape" of the said faces was therefore simultaneously discussed during the oral proceedings with the admittance of the opponent's objection under added matter related to feature 1.6.

2.4 The board decided to admit the opponent's allegation that there would be a difference between the "perimeter" of the first and second faces and the "geometric shape" of the said faces in combination with the objection concerning feature 1.6 for the following reasons.

The Enlarged Board ruled in G 10/91 (OJ EPO, 1993, 420, point 19) that "in case of amendments of the claims or other parts of a patent in the course of opposition or appeal proceedings, such amendments are to be fully examined as to their compatibility with the requirements of the EPC". The Enlarged Board further confirmed in G 9/91 (OJ EPO, 1993, 408, point 18 of the reasons) that Article 114(1) EPC, empowering the EPO to examine the facts of its own motion, also covers the appeal proceedings, albeit in a more restrictive manner.

Following the conclusion of G 10/91, the board takes the view that under the circumstances of this case:

- in which the appealed decision did not deal with auxiliary request 4C<sup>(I)</sup> (auxiliary request 4C<sup>(I)</sup> filed during the oral proceedings before the board

is based on previous auxiliary request 4C<sup>(I)</sup> filed with the statement of grounds of appeal), and

- in which claim 1 of auxiliary request 4C<sup>(I)</sup> is amended by introducing features taken from the description,

the mere fact that the opponent did not provide the allegation that there would be a difference between the "perimeter" of the first and second faces and the "geometric shape" of the said faces in combination with the objection concerning feature 1.6 with its statement of grounds of appeal or its reply to the grounds of appeal does not justify ignoring this allegation of fact in combination with this objection without the board carrying out an examination of its own motion (Article 114(1) EPC) in respect of the requirements of Article 76(1) EPC based on this allegation of fact.

3. Added subject-matter - Claim 1 - Article 76(1) EPC

3.1 Claim 1 of auxiliary request 4C<sup>(I)</sup> reads as follows:

*"1. Abrasive particles comprising dish-shaped abrasive particles (20);*

*each of the dish-shaped abrasive particles having a sidewall (28);*

*each of the dish-shaped abrasive particles (20) comprising alpha alumina; and*

*each of the dish-shaped abrasive particles having a first face (24) and a second face (26) separated by a varying thickness (T), a perimeter (29) of the first face (24) and a perimeter (29) of the second face (26)*

**wherein the sidewall forms the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26),**

wherein **the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face,**

wherein the perimeter (29) comprises a triangular shape;

wherein the first face (24) is recessed, **wherein a thickness ratio of  $T_c/T_i$  for the dish-shaped abrasive particles (20) is between 1.25 and 4.00, wherein, in order to calculate the thickness ratio:**

- **fifteen randomly selected dish-shaped abrasive particles (20) are screened;**
- **the height of each corner of each abrasive particle (20) is measured and then all of the heights are averaged to determine an average  $T_c$ ;**
- **the smallest thickness  $T_i$  of the interior of the first face (24) of each of the fifteen randomly selected dish-shaped abrasive particles is measured and the fifteen results are averaged to determine an average  $T_i$ ; and**
- **the thickness ratio is determined by dividing the average  $T_c$  by the average  $T_i$ .** (emphasis added by the board showing the features in addition to those of claim 1 of the main request).

3.2 The opponent submitted *inter alia* that the feature of claim 1 that "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are

selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face" was not based on the parent application.

3.3 The patent proprietor submitted that the objected feature was based on the passage on page 5, lines 14 to 19 of the parent application.

3.4 The board does not agree with the patent proprietor for the following reasons.

Claim 1 of auxiliary request 4C<sup>(I)</sup> comprises the feature that "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face".

Compared to claim 1 of the main request, the first face (24) and the second face (26) were replaced by the terms "the perimeter (29) of the first face (24)" and "the perimeter (29) of the second face (26)".

Thus, claim 1 of auxiliary request 4C<sup>(I)</sup> only requires that the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape. The geometric shape of the first face (24) and the geometric shape of the second face (26) are not specified in claim 1 of auxiliary request 4C<sup>(I)</sup>, and thus not limited as long as the perimeter (29) of both faces comprises a triangular shape.

In contrast, the passage on page 5, lines 1 to 19 of the parent application discloses that "*[i]n one embodiment, the perimeter 29 of the first face 24 and second face 26 is selected to be a geometric shape, and*

*the first face 24 and the second face 26 are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face".*

Thus the passage on page 5, lines 15 to 19 of the parent application comprises two essential features:

- (i) the perimeter 29 of the first face 24 and second face 26 is selected to be a geometric shape, and
- (ii) the first face 24 and the second face 26 are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face.

It follows that, contrary to what is expressed in claim 1 of auxiliary request 4C<sup>(I)</sup>, the passage on page 5, lines 15 to 19 of the parent application specifies that the first face 24 and the second face 26 have the same geometric shape, i.e. the geometric shape of the first face 24 and the second face 26 is limited.

Consequently, the features "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face" in claim 1 of auxiliary request 4C<sup>(I)</sup> is a generalisation of the aforementioned disclosure on page 5 of the parent application to any geometric shape for the first (24) and second (26) faces, as long as the perimeter (29) of both faces comprises a triangular shape. Such a generalisation can only be justified if the features included in claim 1 are not inextricably linked with the feature which was omitted, namely that the

geometric shape of the first face 24 and the second face 26 is limited.

As submitted by the opponent, the wording of the passage on page 5, lines 15 to 19 of the parent application leaves no doubt that the above features (i) and (ii) are mandatory and further, that the features are linked to each other. Specifically, by use of the conjunction "and", this passage unequivocally connects the feature "the perimeter 29 of the first face 24 and second face 26 is selected to be a geometric shape" with the feature "the first face 24 and the second face 26 are selected to have the same geometric shape".

Thus the feature of claim 1 according to which "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face" amounts to added subject-matter.

- 3.5 The patent proprietor disputed this conclusion and argued that the geometric shape of the first (24) and second faces (26) was clearly defined by their respective (triangular) perimeter (29) in claim 1 of auxiliary request 4C<sup>(I)</sup>. This definition corresponded to the disclosure of the passage of page 5, lines 15 to 19 of the parent application. This passage once referred to the "perimeter" of the first and second face as having "a geometric shape" and once to the "first face 24 and the second face 26" as having the "same geometric shape". The skilled person would have understood that the same geometric shape was intended for both the perimeter and the faces. Hence, the feature "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may

differ in size with one face being larger than the other face" of claim 1 did not differ in meaning from the disclosure on page 5, lines 15 to 19 of the parent application, and thus found basis therein.

3.6 The board does not share the patent proprietor's opinion.

That the geometric shape of the first (24) and second faces (26) was clearly defined by their respective (triangular) perimeter (29) in claim 1 of auxiliary request 4C<sup>(I)</sup> is based on the interpretation that the first (24) and second face (26) have the same geometric form as the perimeter (29).

It is however not defined in the claim that the geometric shape of the first (24) and second faces (26) is defined by their respective perimeter (29). As submitted by the opponent, when the first face has the "same geometric shape" as the second face, as stated on page 5 of the parent application, this implies that the faces as a whole, including both the perimeter and the surface contours thereof (i.e. the interior part of the face away from the perimeter) are the same. In contrast, when only the *perimeter* of the first and second faces have the "same geometric shape" as expressed in claim 1, this in turn implies that the surface contours or topology of the first face can be different from the surface contours or topology of the second face.

On the other hand, as set out above, the passage on page 5, lines 15 to 19 of the parent application discloses that "*the first face 24 and the second face 26 are selected to have the same geometric shape*", i.e. the geometric shape of the first face 24 and the second face 26 is limited. Therefore, the feature in claim 1

that "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face" does not have the same meaning as the disclosure on page 5, lines 15 to 19 of the parent application. Therefore, basis for said feature in claim 1 is not directly and unambiguously derivable from the parent application.

3.7 Consequently, claim 1 of auxiliary request 4C<sup>(I)</sup> does not meet the requirements of Article 76(1) EPC.

3.8 Auxiliary request 4C<sup>(I)</sup> was filed during the oral proceedings. The opponent requested that auxiliary request 4C<sup>(I)</sup> not be admitted into the proceedings. During the oral proceedings, the board decided to admit auxiliary request 4C<sup>(I)</sup>. Since the decision is in the opponent's favour, there is no need for the board to provide any reasons for the admittance of auxiliary request 4C<sup>(I)</sup>.

#### *Auxiliary request 4D*

4. Admittance of auxiliary request 4D

4.1 During the oral proceedings before the board, the patent proprietor filed auxiliary request 4D.

Claim 1 of auxiliary request 4D differs from claim 1 of auxiliary request 4C<sup>(I)</sup> in that the feature "*the perimeter (29) comprises a triangular shape*" was amended to read "*the perimeter (29) is a triangular shape*" (emphasis added by the board).

4.2 The opponent objected to the admittance of auxiliary request 4D into the appeal proceedings.

4.3 Since auxiliary request 4D was filed during the oral proceedings before the board, the admittance of the request is governed by, *inter alia*, Article 13(1) RPBA.

Under Article 13(1) RPBA, any amendment to a party's appeal case after it has filed its grounds of appeal or reply is subject to the party's justification for its amendment and may be admitted only at the discretion of the board. When exercising its discretion, the board should consider in the case of an amendment to a patent, whether the party has demonstrated that any such amendment, *prima facie*, overcomes the issues raised in the appeal proceedings.

4.4 It was common ground between the parties that auxiliary request 4D constitutes an amendment of the patent proprietor's appeal case. As stated by the opponent, the amendment made in auxiliary request 4D (4.1, *supra*) does not overcome the objection raised against claim 1 of auxiliary request 4C<sup>(I)</sup> with regard to the features "the perimeter (29) of the first face (24) and the perimeter (29) of the second face (26) are selected to have the same geometric shape, although, they may differ in size with one face being larger than the other face". This was not disputed by the patent proprietor during the oral proceedings.

4.5 Since claim 1 of auxiliary request 4D does not overcome the objection raised against claim 1 of auxiliary request 4C<sup>I</sup>, the board decided not to admit auxiliary request 4D into the appeal proceedings pursuant to Article 13(1) RPBA.

Auxiliary request 4E

5. Extension of scope - Claim 1 - Article 123(3) EPC

5.1 One of the features of claim 1 of auxiliary request 4E was amended as follows:

*"wherein the perimeter (29) of the first face (24) and ~~the perimeter (29) of the second face (26)~~ **is** are selected to **be a geometric shape, and the first face (24) and the second face (26) are selected to** have the same geometric shape, although, they may differ in size with one face being larger than the other face,"* (emphasis added by the board; strike through and bold text representing deletion and addition respectively compared to claim 1 of auxiliary request 4C<sup>I</sup>).

The board acknowledges that the above feature as amended is identical to the disclosure on page 5, lines 15 to 19 of the parent application, and thus overcomes the objection of added subject-matter dealt with above in the context of claim 1 according to auxiliary request 4C<sup>I</sup>.

As set out above, claim 1 of the main request is claim 1 as granted. Claim 1 as granted requires that *"the first face (24) and the second face (26) are selected to have the same geometric shape"* and that the perimeter (29) comprises a triangular shape.

5.2 The opponent contended that claim 1 of auxiliary request 4E extended the scope of protection, contrary to Article 123(3) EPC.

5.3 The board agrees. As submitted by the opponent, in claim 1 as granted, when the first face (24) has the "same geometric shape" as the second face (26), this

implies that the faces as a whole, including the perimeter and the surface contours or topology thereof (convex, concave, uneven, etc.) are the same (apart from their size).

On the other hand, in claim 1 of auxiliary request 4E, the perimeter (29) of the first face (24) and second face (26) is selected to be a geometric shape and the first face (24) and the second face (26) have the same geometric shape. However, in view of the antecedent "the perimeter (29) of the first face (24) and second face (26) is selected to be a geometric shape", it is not clear to which geometric shape the feature "the first face (24) and the second face (26) have the same geometric shape" refers. A first interpretation of the claim is that the geometric shape of the first face (24) is the same as the geometric shape of the second face (26), like in claim 1 as granted; i.e. there is no link between the geometric shape of the faces and the geometric shape of the perimeters. A second equally reasonable interpretation is that the geometric shape of the faces is the same as the geometric shape of the perimeters. However, the first occurrence of the term "geometric shape" in claim 1 of auxiliary request 4E is applied to the *perimeter* of the respective faces, and thus refers to the two-dimensional outline defining the boundary of each face. Since the subsequent reference to the "geometric shape" of the faces themselves has antecedent basis in the first occurrence of "geometric shape", it must therefore be understood in the same sense, i.e. as merely defining the two-dimensional outline of the face. Hence, since the faces in claim 1 of auxiliary request 4E are defined by their perimeters and no three-dimensional contour or surface topology is specified, the "geometric shape" of the faces in claim 1 of auxiliary request 4E does not define any spatial

form beyond that boundary. Accordingly, in this context, the "geometric shape" of the faces in claim 1 of auxiliary request 4E is to be interpreted as the two-dimensional shape defined by its perimeter.

Thus, following the above second interpretation, and since claim 1 of auxiliary request 4E requires that "*the perimeter (29) is a triangular shape*", the first face (24) and the second face (26) in claim 1 of auxiliary request 4E have a triangular shape. However, as explained above, claim 1 of auxiliary request 4E does not limit the surface contours or topology of the first face (24) and the second face (26). This implies that the surface contours or topology of the first face (24) can be different from the surface contours or topology of the second face (26), e.g., the first face (24) can be flat and the second face (26) can be convex, or can be uneven, etc.

This embodiment is however not covered by claim 1 as granted, as set out above, since therein the term "geometric shape" therein requires that the surface contours or topology of the respective faces are the same.

- 5.4 The patent proprietor disputed this conclusion and argued that the geometric shape of the first (24) and second face (26) was clearly defined by their respective (triangular) perimeter (29) in claim 1 as granted. The skilled person would have understood in view of its common general knowledge that the feature "the first face 24 and the second face 26 are selected to have the same geometric shape" did not define that the first and second face had to both be planar or both be concave.

The board does not agree.

As set out above, claim 1 as granted only requires that *"the first face (24) and the second face (26) are selected to have the same geometric shape"*. There is no antecedent in the claim referring to a geometric shape. It follows that the geometric shape of the first face (24) is the same as the geometric shape of the second face (26). Thus, according to claim 1 as granted, the surface shape (e.g. planar, concave, convex or having bumps) of the first face (24) cannot be different from the surface shape of the second face (26).

5.5 Thus claim 1 of auxiliary request 4E does not meet the requirements of Article 123(3) EPC and auxiliary request 4E is not allowable.

6. Auxiliary request 4E was filed during the oral proceedings. The opponent requested that auxiliary request 4E not be admitted into the proceedings. During the oral proceedings, the board decided to admit auxiliary request 4E. Since the decision is in the opponent's favour, there is no need to for the board to provide any reasons for the admittance of auxiliary request 4E.

Auxiliary requests 0", 0, 0', 0"', 1 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup>

7. Added subject-matter - Claim 3 - Article 76(1) EPC

7.1 Auxiliary requests 0", 0, 0', 0"', 1 to 4C, 5 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup> comprise a dependent claim 3 containing the features of claim 3 of the main request.

During the oral proceedings, after having announced that auxiliary requests 4C<sup>(I)</sup> and 4E were not allowable and auxiliary request 4D was not admitted into the proceedings, the board stated that in its preliminary

opinion, the same conclusion of added subject-matter as that provided *inter alia* for claim 3 of auxiliary request 4C<sup>(I)</sup> filed with the patent proprietor's statement of grounds of appeal seemed to apply to claim 3 of each of auxiliary requests 0", 0, 0', 0"', 1 to 4C, 5 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup> (minutes of the oral proceedings, page 5, third and fourth paragraphs; page 7, "Remaining claim requests"). As is apparent from the patent proprietor's requests set out above, auxiliary request 4C<sup>(I)</sup> filed with the patent proprietor's statement of grounds was withdrawn during oral proceedings before the board and replaced with a new auxiliary request submitted during oral proceedings and bearing the same number. Hence, in the following, the board's reasoning developed in relation to withdrawn auxiliary request 4C<sup>(I)</sup> is set out for the highest ranking auxiliary request in which claim 3 is still present, namely auxiliary request 0".

7.2 Claim 3 of auxiliary request 0" reads as follows:

*"3. The abrasive particles of claim **1 or 2**, wherein the first face (24) is concave."* (emphasis added by the board; bold text representing addition compared to claim 4 of the parent application).

Claim 3 of auxiliary request 0" is dependent on claim 1 or 2. Claim 2 of auxiliary request 0" requires that *"the second face is substantially planar"*.

The opponent submitted that claim 3 of auxiliary request 0" added subject-matter beyond the content of the parent application since the second face of the abrasive particles had been generalised to any shape.

The board agrees. Since claim 3 of auxiliary request 0" is dependent on, *inter alia*, claim 1 and not dependent on claim 2 only, the feature of claim 3, namely that the first face (24) is concave, is disclosed independently of the feature of claim 2 (the second face is substantially planar). Therefore, when dependent on claim 1, the second face of the abrasive particles of claim 3 of auxiliary request 0" may have any shape.

In contrast, claim 4 of the parent application is only dependent on claim 2. Claim 2 requires that "*the second face is substantially planar*". Hence the features of claim 4 of the parent application, namely that the first face (24) is concave, are only disclosed in combination with the features of claim 2, i.e. that the second face is substantially planar. Thus the second face of the abrasive particles of claim 4 of the parent application, being only dependent on claim 2, has a specific shape, i.e. it is substantially planar.

7.3 The patent proprietor submitted that, according to the disclosure on page 20, lines 31 and 32 of the parent application, the planar bottom surface of the mould, which determined the shape of the second face, was optional. Moreover, figures 6A and 6B in combination with page 12, line 27 to page 13, line 7 of the parent application disclosed an embodiment with a concave first face combined with a non-planar second face. Page 1, lines 18 to 22 of the parent application referred to an abrasive particle characterised by one recessed or concave face. These disclosures represented a basis for generalising the second face to any shape.

7.4 The board is not convinced by the patent proprietor's submission.

First, the passage on page 20, lines 31 and 32 of the parent application discloses that "[t]he mold can have a generally planar bottom surface and a plurality of mold cavities". Thus, this passage relates to the process of preparation of the abrasive particles in general and not to the specific abrasive particles as defined in claim 1 of auxiliary request 0". It thus does not represent a basis for claim 3 of auxiliary request 0".

Second, as set out above, the embodiment disclosed in figures 6A and 6B in combination with page 12, line 27 to page 13, line 7 of the parent application, relied on by the patent proprietor, belongs to the third embodiment disclosed in claim 15 of the parent application. Claim 4 of the parent application is dependent on claim 1 and thus relates to the first embodiment.

Since the features disclosed in figures 6A and 6B in combination with page 12, line 27 to page 13, line 7 of the parent application are part of the third embodiment, they cannot be combined with the features of the first embodiment. Thus the features disclosed in figures 6A and 6B in combination with page 12, line 27 to page 13, line 7 of the parent application cannot serve as basis for the generalisation of the second face of the abrasive particles of claim 4 of the parent application to any shape.

Finally, the passage on page 1, lines 18 to 22 of the parent application is a summary of the invention: it only refers to the invention in broad terms. It does not relate to the first embodiment defined *inter alia* by the feature of claim 4 of the parent application. This cannot either support the generalisation of the

second face of the abrasive particles of claim 4 of the parent application to any form.

Consequently, there is no direct and unambiguous disclosure in the parent application for the features of claim 3 of auxiliary request 0" when depending on claim 1.

- 7.5 The board concludes that claim 3 of auxiliary request 0" comprises subject-matter which extends beyond the content of the parent application (Article 76(1) EPC).
- 7.6 Although the board also concluded that further dependent claims of this request failed to meet the requirements of Article 76(1) EPC, in view of the conclusion in relation to claim 3, there is no need for the board to address said claims.
- 7.7 The patent proprietor did make any submission contesting the board's preliminary opinion that the same conclusion of added subject-matter as that given for claim 3 of auxiliary request 4C<sup>(I)</sup> filed with the patent proprietor's statement of grounds of appeal seemed to apply to claim 3 of each of auxiliary requests 0", 0', 0"', 1 to 4C, 5 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup>. In the absence of any submission in reply to the board's preliminary opinion, the reasons provided for added subject-matter in claim 3 of auxiliary request 0" apply *mutatis mutandis* to claim 3 of each of auxiliary requests 0, 0', 0"', 1 to 4C, 5 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup>, which therefore also comprises subject-matter extending beyond the content of the parent application (Article 76(1) EPC).

8. Therefore, auxiliary requests 0", 0, 0', 0"', 1 to 4C, 5 to 8C, 1<sup>I</sup> to 4B<sup>I</sup>, 5<sup>I</sup> to 8C<sup>I</sup>, 1<sup>II</sup> to 8C<sup>II</sup>, 1<sup>III</sup> to 8C<sup>III</sup>, and 1<sup>IV</sup> to 8C<sup>IV</sup> are not allowable.
9. None of the patent proprietor's claim requests is both admissible and allowable.

## 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:



U. Bultmann

P. O'Sullivan

Decision electronically authenticated