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D E C I S I O N
of 6 May 1999

Case Number: T 0686/96 - 3.3.5

Application Number: 86309346.4

Publication Number: 0227334

IPC: C01B 33/18

Language of the proceedings: EN

Title of invention:
Precipitated silicas

Patentee:
Crosfield Limited

Opponents:
Degussa AG, Frankfurt - Zweigniederlassung Wolfgang- Zentrale
Abteilung Patente
Rhodia Chimie

Headword:
Precipitated silicas/CROSFIELD

Relevant legal provisions:
EPC Art. 54(1)

Keyword:
"Novelty - no, ambiguous delimitation"

Decisions cited:

-

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0686/96 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 6 May 1999

Appellant: Degussa AG, Frankfurt
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 11 June 1996
rejecting the opposition filed against European

patent No. 0227 334 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: G. J. Wassenaar
M. B. Günzel

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division to reject the oppositions and maintain European patent No. 0 227 334 with claims 1 to 8 as granted. Claim 1 of the patent in suit reads as follows:

"An amorphous precipitated silica having
i) a surface area in the range from about 10 to about 400 m²/g,
ii) an oil absorption (using linseed oil) of about 110 to about 180 cm³/100g,
iii) a weight mean particle size in the range from about 3 to about 20 microns and
iv) a perspex® abrasion value in the range from about 12 to about 20."

II. In the decision, inter alia, the following prior art documents were considered:

R1: US-A-4067746

R2: Journal of Dental Research 55(1) pages 563-573, 1976

R3: US-A-4244707

R5: US-A-4340583.

III. In the statement of the grounds of the appeal, the appellant Degussa maintained that the product according to granted claim 1 lacked novelty and inventive step.

IV. The appellant Rhodia maintained in its statement of grounds that the product according to claim 1 lacked novelty over R1 and R3. New documents were filed of which only the following remained relevant for this decision:

R9: The University of Kansas, Center for Biomedical Research, letter of John J. Hefferren, dated 16 October 1996.

V. Oral proceedings took place on 6 May 1999. Appellant Degussa, who had informed the Board accordingly, was not represented.

With respect to the novelty objection based on R1 the appellant Rhodia argued essentially as follows:

Example II of R1 disclosed an amorphous precipitated silica having all the properties required by claim 1. Although R1 did not mention the "perspex abrasion value" (hereinafter referred to as PAV), the silica of example II also had an abrasivity as required by feature iv of claim 1 for the following reasons:

According to the patent in suit the PAV range from about 12 to about 20 corresponded to a "Radioactive Dentine Abrasion" (RDA) range of 60 to 165. The RDA values given in the patent in suit were based on a scale with a standard of 100 for calcium pyrophosphate (RDA₁₀₀). The "Abrasive Index" of 310, given in table VIII for said example 2 of R1 related to the old RDA scale, based on a scale with a standard of 500 for calcium pyrophosphate (RDA₅₀₀), and corresponded to a RDA₁₀₀ value of 62.

VI. The respondent maintained that the subject matter of the granted claims was new and involved an inventive step over the available prior art. With respect to the novelty objection based on R1 it was essentially argued that the abrasion index of 310 mentioned in table VIII did not correspond to a RDA value of 62 for the following reasons:

There was no evidence that the said abrasion index was measured according to the RDA₅₀₀ standard.

The abrasion index in R1 was measured in a toothpaste composition and not in a reference suspension as indicated in the patent in suit.

Calculating the RDA₁₀₀ value by dividing the RDA₅₀₀ value by five was not permissible.

VII. The appellants requested that the decision under appeal be set aside and European patent No. 0 227 334 be revoked.

The respondent requested that the appeal be dismissed and the patent be maintained.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

2.1 The respondent did not dispute that R1 disclosed in example 2 an amorphous precipitated silica for use in

toothpaste compositions having features i to iii of present claim 1. Thus with respect to novelty it only has to be decided whether the silica of said example 2 also has an abrasion value as required by feature iv of claim 1.

2.2 The silicas of R1 are useful polishing and cleaning agents in dentifrices (column 5, lines 15 to 17). At the date on which R1 was filed (8 July 1976) there existed a standard test for determining the abrasivity of polishing agents for use in toothpaste compositions, the so called RDA test, developed by Dr R. J. Grabenstetter and published in the Journal of Dental Research 37: 1060-1068, 1958, whereby calcium pyrophosphate, given an abrasivity number of 500, was taken as reference; see R2 and R9. With respect to the "Abrasivity Index" in table VIII, R1 discloses that "The abrasive properties of the polishing agent of the invention were studied and compared to the abrasive property of commercially available polishing agents. Calcium pyrophosphate abrasive was used as a reference standard and assigned an abrasivity index of 500. Compared with the reference standard, the abrasivity index obtained with polishing agents of this invention is listed in table VIII below." (column 18, lines 3 to 10). In the closely related US patent R3 of the same assignee and the same inventor as in R1, RDA abrasivity values between 200 and 400 are mentioned, whereby explicit reference is made to RDA-Grabenstetter et al, Jour. of Dental Research, 37, 1060, 1958 (R3, column 4, lines 23 to 26). In the absence of any document disclosing other tests in the field of dental abrasives using a reference of 500 for calcium pyrophosphate than the above mentioned RDA-Grabenstetter test, the Board

concludes that it has been established beyond reasonable doubt that the abrasive index mentioned in R1 was also determined with said RDA test.

- 2.3 With respect to the abrasivity index in table VIII, R1 indicates that they are obtained with "polishing agents of this invention" and that "the abrasive properties of the polishing agent of the invention were studied and compared to the abrasive property commercially available polishing agents". It was concluded that "the abrasivity index of polishing agents of this invention is lower than the reference standard phosphate of index value 500" (column 18, lines 3 to 22). The Board agrees with the respondent that said text passages are not in conformity with the immediately preceding text, which says that "in a series of tests the low structure silicas of examples I thru IV were formulated into a toothpaste having the following compositions by weight". Taking into account the fact that the RDA test may be performed with paste dentifrices (R2, page 567, left column), and that in a later publication of Satish K. Wagon, one of the co-inventors of R1, the RDA values of silica abrasives have actually been determined with a dentifrice (R5, column 21, line 27 to column 22, line 21) the Board cannot exclude the possibility that the abrasive tests, the results of which are indicated in table VIII of R1, were performed with the toothpaste containing the silica and not with the silica itself. If paste dentifrices are used to determine the abrasive properties of the abrasive with the RDA test, conditions should be chosen such that the volume of the test slurry and the abrasive concentration are similar to those of the reference abrasive slurry (R2, page 567, left column). Under such conditions the

results of the RDA test performed with a silica containing toothpaste composition according to R1, column 17, line 60 to column 18, line 2, are not likely to deviate substantially from those performed with a silica containing reference slurry as indicated in the patent in suit (page 4, lines 55 to 58). In the absence of evidence or arguments showing the contrary, the Board accepts that the abrasivity index values given in table VIII of R1 are representative of the RDA value of silicas according to the examples I to IV of R1.

- 2.4 With respect to the change in RDA scale, R2 discloses that for the reference abrasive material the abrasiveness value is to be taken as 100 in the final calculation step and that "This value, rather than the 475 or 500 used in previous adaptations of the Grabenstetter procedure, stresses that abrasivity values from the present procedure are not necessarily proportional to older values." (page 566, right hand column). The respondent concluded therefrom that RDA₅₀₀ values may not be simply converted to RDA₁₀₀ values by dividing by five. In the absence of any reasons in R2 why, and under what circumstances, a conversion of the RDA₅₀₀ to RDA₁₀₀ values would not be allowable, the Board cannot agree with the respondent's conclusion. Moreover, in R9, a letter from research professor John J. Hefferren, the author of R2, to Mr A. Dromard of Rhone-Poulenc Chimie, Professor Hefferren declares that "data from abrasivity studies using the initial 500 calcium pyrophosphate abrasivity scale can be converted to the 100 calcium pyrophosphate abrasivity scale by dividing by five". The respondent rejected said statement with the arguments that it was made 20 years after the publication of R2 so that Professor Hefferren

might have forgotten the reasons why the figures were not proportional, and that the statement might be biased by the way Mr Dromard had formulated his request. The Board cannot accept these arguments. In R9 reference is made to R2 and it is thus unlikely that Professor Hefferren formulated his reply without having read his own earlier paper. There is no objective reason for any partiality on Professor Hefferren's part. If the said statement in R9 (filed on 21 October 1996) was not correct, the respondent had more than two and a half years to file a counterstatement by Professor Hefferren or some other expert in this field. In the absence of any evidence to the contrary the Board accepts that the RDA₅₀₀ values may be converted to the RDA₁₀₀ by dividing by five.

2.5 For the reasons given above the Board accepts that the silica of example II of R1 has a RDA₁₀₀ value of about 62, which falls within the range of abrasion values given in feature iv of claim 1, taking into consideration the respondent's own submission that a PAV range of about 12 to about 20 corresponds to a RDA range of 60 to 165.

2.6 But even if the actual RDA value of the said prior art silica were somewhat below 60, feature iv of claim 1 would not establish novelty because the lower limit of the range is not defined precisely. Since the lower limit of the PVA range is defined by "about 12" the corresponding figure of the RDA value should also read "about 60", which in a normal interpretation would include values from 55 to 64.

When deciding on novelty of the subject matter of a

claim, the Board considers that the broadest technically meaningful interpretation of a claim should be taken into account. The respondent, who was made aware of the inherent ambiguity of claim 1 caused by the use of the term "about" for the definition of the range here under consideration, did not avail himself of the possibility of amending his claim in order to remove this ambiguity.

In the Board's judgement, for assessing novelty, the scope of claim 1 is to be construed so that the indicated lower limit of PVA-values corresponds to a RDA₁₀₀ value as low as 55.

- 2.7 On that basis, the Board holds that it is beyond reasonable doubt that the silica of example II of R1 meets all the requirements of claim 1, which therefore covers known subject-matter. Thus the subject matter of claim 1 lacks novelty over R1.
3. In view of this finding, there is no reason to consider the objections raised by the appellant Degussa.

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:

S. Hue

R. Spangenberg