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**Datasheet for the decision
of 21 December 2011**

Case Number: W 0034/07 - 3.3.05

Application Number: PCT/EP2007/053351

Publication Number: WO 2007/116010

IPC: C04B 35/486

Language of the proceedings: EN

Title of invention:

Ceramic products comprising nanoparticles of zirconium hydroxide and/or glass frits

Applicant:

Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase, C.S.G.I.

Headword:

Coated ceramics/CSGI

Relevant legal provisions:

PCT Art. 17(3)(a)
PCT R. 13(1)(2)(3), 40.1, 40.2(c)(e)

Relevant legal provisions (EPC 1973):

EPC Art. 154(3)

Keyword:

"Lack of unity a posteriori (yes)"
"Protest dismissed (yes)"

Decisions cited:

W 0035/08

Catchword:

-



Case Number: W 0034/07 - 3.3.05

International Application No. PCT/EP2007/053351

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 21. December 2011

Applicant: Consorzio Interuniversitario per lo Sviluppo
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Decision under appeal: Protest according to Rule 40.2(c) of the Patent
Cooperation Treaty made by the applicants
against the invitation (payment of additional
fees) of the European Patent Office
(International Searching Authority) dated
18 July 2007.

Composition of the Board:

Chairman: G. Raths
Members: B. Czech
T. Bokor

Summary of Facts and Submissions

I. International patent application no. PCT/EP2007/053351 was filed on 5 April 2007 with 21 claims of which four are independent.

Independent claims 1, 12, 18 and 19 read as follows:

*"1. Compositions for the coating of ceramic supports comprising micronized glass frits **and/or** nanosized zirconium hydroxide"* (emphasis added by the board).

"12. Suspensions comprising a composition according to Claims 1- 11 in water or in ethanol, propanol and isopropanol."

"18. Process for producing ceramic product coating wherein:

- a suspension according to Claims 12 - 17 is applied on the surface of said ceramic;*
- the ceramic is baked at the desired temperature with formation of nano- and micro-sized zirconia in situ by zirconium hydroxide calcination."*

"19. Ceramic products comprising a coating obtained by baking a suspension according to Claims 12 - 17 applied on the surface of said ceramic products before baking."

II. The European Patent Office (EPO), acting as an International Searching Authority (ISA), informed the applicant by means of Form PCT/ISA/206 that it considered that the international application did not comply with the requirement of unity of invention set out in Rule 13(1)(2)(3) PCT. It considered that there

were two inventions claimed in the international application and therefore invited the applicant to pay one additional fee in accordance with Article 17(3)(a) and Rule 40.1 PCT.

The invitation to pay an additional fee was mailed on 18 July 2007 together with a partial search report citing several prior art documents of the "X" and "Y" categories with regard to the invention first mentioned in the claims, inter alia document US 5 801 108 A of category "X" with respect to claims 1, 4-9, 12-17 and 19-21; see Form PCT/ISA/206 (Annex, first sheet).

In said invitation (Form PCT/ISA/206 (extra sheet), the ISA indicated the following reasons for raising the objection:

"This International Search Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-21 (in part)

Compositions and suspensions for coating ceramic product, comprising micronized glass frit

2. Claims: 1-21 (in part)

Compositions and suspensions for coating ceramic product, comprising nanosized zirconium hydroxide

Compositions and suspensions for coating ceramic products in general are known (see e.g. US-A-5801108, example 1).

According to the present description on page 1, line 22- page 2, line 2 and example 3 on page 9, the

micronized glass frit used as a coating on a ceramic product solves the problem of increasing the stain resistance of the coated ceramic without deteriorating its hardness.

According to the description on page 8, examples 1 and 2, and on page 12, lines 2-11, the nanosized zirconium hydroxide, turning into a coating of nanosized zirconia, solves the problem of increasing the hardness of the coated ceramic product without deteriorating the surface properties.

These technical features are neither the same nor are they corresponding in the sense of Rule 13.2 PCT. Hence they cannot serve to link the two inventions so as to form a single general inventive concept."

III. The applicant paid the additional search fee under protest, and in its written statement dated 13 August 2007 it set out the following:

"The Examiner has raised a non unity objection considering that the invention refers to two different inventions identified as:

1) Compositions and suspensions comprising micronized glass frit

2) Compositions and suspensions comprising nanosized zirconium hydroxide.

The distinction between the two inventions, according to the Examiner's explanations, is based on the fact that invention (1) refers to compositions for increasing the stain resistance of the coated ceramic while invention (2) refers to the increasing of hardness of the coated ceramic.

The distinction made by the Examiner appears to be rather artificial, in fact from the application as a

whole it is clear that the purpose of the invention is to provide products capable of increasing the stain resistance of ceramic products making available coating products capable of enhancing hardness and resistance to usury [sic] at the same time (see also page 2 lines 9-10).

In this connection it should be noted how in the description it is clearly specified as, for example, the use of zirconium nanosized particles or glass frits alone increases resistance to usury, hardness and stain resistance (see Examples 1 lines 14 -17 and Example 3 lines 10-13). Therefore the object considered as two separate inventions are on the contrary strictly linked and actually are simply two aspects of the same problem to be solved.

Moreover, the following should also be considered. The invention, as it is clear from the description as a whole, is principally directed to compositions containing glass frits and nanosized zirconium hydroxide.

In fact, although, as said above, all the solutions described are in principle efficient and suitable for reaching the wanted scope, it is evident how it is the presence of both the above said materials that allows the best results.

In connection with the above the three examples (i.e. Examples 1 - 3) in which the use of only one material is described have been reported as a sort of comparative examples between the composition containing both materials (Examples 4 - 9) and those containing only one of the two in order to show and underline the highly better properties of the composition containing both compounds.

- IV. With Form PCT/ISA/228 mailed on 10 October 2007, the ISA invited the applicant to pay a protest fee pursuant to Rule 40.2(e) PCT, after a review board of the EPO confirmed the lack of unity of invention and refused the request for refund of the additional search fee. A complete International Search Report (Form PCT/ISA/210) and a written opinion (Form PCT/ISA/237) were mailed on the same day.
- V. With letter of 25 October 2007, the applicant authorised the EPO to deduct the amount of the protest fee from its account.

Reasons for the Decision

1. Competence of the board

Considering the filing date of the application, the protest is subject to the provisions of the PCT as in force from 1 April 2007. Under Article 154(3) EPC 1973, the board is competent to decide on this protest pending at the time of entry into force of the EPC 2000, see e.g. decision W 35/08 of 6 August 2009, reasons 1.

2. Admissibility of the protest

The appellant's protest against the invitation to pay an additional search fee was filed in time and reasoned. The protest fee was paid in time. Hence the protest is admissible.

3. Request for reimbursement

The applicant's written submissions referred to under the above points III and V imply that the applicant wished to have the additional search fee and the protest fee reimbursed. Hence, it has to be decided whether or not such a reimbursement is justified, Rule 40.2(c) and (e) PCT.

4. Unity of invention

4.1 According to Rule 13.3 PCT, the determination of unity of invention is to "be made without regard to whether the inventions are claimed in separate claims or as alternatives within in single claim".

4.2 In the present case, considering the wording "and/or" used in claim 1, the latter is directed to compositions comprising micronized glass frits only, nanosized zirconium hydroxide only, or both.

4.3 The two inventions as identified by the ISA in the invitation to pay an additional search fee (Form PCT/ISA/206 (extra sheet); see point II above) are thus both expressly claimed, within independent claim 1, as two distinct independent alternatives.

4.4 The statement of the applicant in its reply to the invitation, that the invention was "principally" directed to compositions comprising both micronised glass **and** nanosized zirconium hydroxide is to no avail since independent claim 1 is not limited to this alternative.

- 4.5 Hence, the question to be answered is whether the two alternatives identified by the ISA are "so linked as to form a single general inventive concept", Rule 13.1 PCT.
- 4.6 As set by the ISA in the invitation to pay an additional search fee (Form PCT/ISA/206 (extra sheet)), document US 5 801 108 A discloses in its example 1 a composition for coating ceramic products, i.e. the features in common to said two claimed alternatives. This was not disputed by the appellant.
- 4.7 The objection by the ISA is based on prior art relating to known compositions. The objection was thus raised a *posteriori*.
- 4.8 All the express features in common to the two claimed alternatives being undisputedly known in combination from the prior art, it remains to be seen whether there is nevertheless a "technical relationship" in the sense of Rule 13.2 PCT between the two different inventions claimed, such as a common property or activity.
- 4.9 However, in the invitation to pay an additional search fee (Form PCT/ISA/206 (extra sheet)) the ISA, taking into account the description of the application and referring to specific passages thereof, considered that the two inventions claimed as independent alternatives solved two different technical problems. Whereas a composition comprising micronized glass frit used as a coating on a ceramic product (i.e. invention 1) solved the problem of increasing the stain resistance of the coated ceramic without deteriorating its hardness, whereas a composition comprising nanosized zirconium hydroxide (invention 2), turning into a coating of

nanosized zirconia, solved the problem of increasing the hardness of the coated product without deteriorating the surface properties. Hence, the two claimed inventions were not so linked as to form a single general inventive concept.

- 4.10 In its reply to the invitation (see point III above), the applicant disagreed and, quoting description passages, considered that both alternatives were strictly linked and solved the same problem, namely to simultaneously increase stain resistance and hardness as well as resistance to "usury" [sic, presumably "wear"] , i.e. to mechanical abrasion. Best results were obtained when using a composition comprising both components.
- 4.11 However, the arguments of the applicant in this respect are not conclusive for the following reasons.
- 4.12 None of the description passages invoked by the appellant supports its assertion that the micronized glass frit and nanosized zirconia provide all the desired properties even when used alone.
- 4.13 The board acknowledges that it is stated on page 2, lines 9 to 13, of the application that the "present invention" simultaneously solves the stain resistance problem and the mechanical resistance problem (hardness and resistance to wear, and that by applying nanosized zirconia or micronized glass frits, or their mixtures to mechanical supports, both mechanical and stain resistance properties may be improved compared to known ceramic supports coated relatively thick layers of glass frit or non-glazed monocottura or porcelain

stoneware (see also page 1, line 18, to page 2, line 7 of the application).

4.14 However, the application does not comprise any evidence such as experimental data convincingly corroborating this assertion. On the contrary, it can only be gathered from examples 1 to 3 invoked by the applicant that the use of micronized glass frit alone (example 3) improves stain resistance (see page 9, lines 7 to 10), whereas the use of nanosized zirconium hydroxide alone (examples 1 and 2) improves hardness and resistance to wear, i.e. mechanical abrasion (page 8, lines 14 to 16, and 28 to 30). The application does not expressly mention an improvement of the mechanical resistance obtainable by using a coating comprising micronized glass frits alone or a stain resistance improvement obtainable by using a coating comprising nanosized zirconium hydroxide alone.

4.15 What can be gathered from the description is that the three desired properties may be obtained in combination when using a composition comprising both micronized glass and nanosized zirconium hydroxide according to the third alternative (the "**and**" alternative) at which claim 1 is also directed. However, this finding has no bearing on the assessment of unity of invention between inventions 1 and 2 as identified by the ISA (see also point 4.4 above).

5. Conclusion

5.1 The board concludes that the two claimed alternatives indentified by the ISA neither have in common express features not known in combination from the prior art

nor represent two solutions to a same technical problem. The effects achieved by using either micronized glass or nanosized zirconium hydroxide are different and unrelated, although they may lead to "best results", i.e. when using a composition comprising both components.

5.2 For the board, the objection raised by the ISA and the invitation to pay an additional search fee was justified, since there is no technical relationship involving one or more of the same or corresponding special technical features between the two inventions identified by the ISA (Rule 13.2 PCT) and hence the inventions are not so linked as to form a single general and inventive concept (Rule 13.1 PCT).

Order

For these reasons it is decided that:

The protest is dismissed

The Registrar:

The Chairman:

G. Rauh

G. Raths