The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte AKIRA FUJINOKI, AKIHIKO SUGAMA
and TOHRU YOKOTA

Appeal No. 1998-2300
Application 08/366,762

HEARD April 11, 2001

Before, KIMLIN, KRATZ and JEFFREY T. SMITH, ***Administrative Patent Judges***.

JEFFREY T. SMITH, ***Administrative Patent Judge***.

Decision on appeal under 35 U.S.C. § 134

Applicants appeal the decision of the Primary Examiner finally rejecting claims 1, 3 and 4. We have jurisdiction under 35 U.S.C. § 134.[1]

[1] The claims on appeal have been amended by an after final amendment, paper no.8, filed September 10, 1996. The Examiner has indicated that the amendment has been entered into the record. (See Examiner's Answer, page 2).

BACKGROUND

The invention is directed to a method for the preparation of vitrified silica glass particles. The vitrified silica glass particles are suitable for use as base material of transparent fused silica glass bodies. Claim 1 which is representative of the invention is reproduced below:

1. A method for the preparation of poreless vitrified silica glass particles which comprises the successive steps of:

(a) admixing finely divided silica particles having a specific surface area in the range from 1 m^2/g to 400 m^2/g with water to form a uniform mixture of the silica particles and water, wherein the amount of water is in the range from 100 to 200 parts by weight per 100 parts by weight of the silica particles;

(b) dehydrating and drying the mixture of the silica particles and water to give a porous caked mass of the silica particles;

(c) disintegrating the porous caked mass of the silica particles to give porous silica particles;

(d) heating the porous silica particles at a temperature in the range from 800°C to 1300°C for a length of time in the range from 5 hours to 100 hours in an atmosphere of chlorine or thionyl chloride to give semi-sintered silica particles having a bulk density in the range from 0.6 to 0.9 g/cm^3; and

(e) heating the semi-sintered silica particles at a temperature in the range from 1450°C to 1550°C for a length of time of at least 10 minutes.

As evidence of obviousness, the Examiner relies on the following references:

Garcia	3,830,371	Aug. 20, 1974
Mehrotra	5,030,433	Jul. 9, 1991
Gonzalez-Oliver	5,063,003	Nov. 5, 1991
Menashi et al. (Menashi)	5,063,179	Nov. 5, 1991

THE REJECTION

The Examiner entered the following ground of rejection:

Claims 1, 3 and 4 are rejected as unpatentable under 35 U.S.C. § 103 over the combination of Mehrotra, Menashi, Gonzalez-Oliver and Garcia. (Examiner's Answer, page 4).

OPINION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellants in support of their respective positions. This review leads us to conclude that the rejection is not well founded. Accordingly, we will reverse § 103 rejection. We will limit our discussion to claim 1, the sole independent claim.

It is well established that the examiner has the initial burden under § 103 to establish a ***prima facie*** case of obviousness. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); ***In re Piasecki***, 745 F.2d 1468, 1471-72, 223

USPQ 785, 787-88 (Fed. Cir. 1984). To that end, the examiner must show that some objective teaching or suggestion in the applied prior art, or knowledge generally available in the art would have led one of ordinary skill in the art to arrive at the claimed invention. ***Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc***., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996).

Mehrotra discloses a method of producing pure and dense fused synthetic silica particles from amorphous silica which exists as discrete particles. (Column 4, lines 41-43). The method includes a two step calcination which is utilized to maximize removal of impurities and minimize devitrification. (Column 8, lines 53–59). In the first step, the amorphous silica particles are calcined in an inert atmosphere at a temperature of at least about 1000°C to increase density and volatilize impurities. (Column 3, line 58-68). In the second step, the temperature is raised, between 1250°C and 1400°C, for a short period of time to increase the density of the silica particles. (Column 8, lines 58-60 and column 9, lines 12-16). Mehrotra discloses inert atmosphere is important during calcination, especially at temperature greater than 1000°C, so as to reduce devitrification and reduce the formation of crystalline phases. (Column 5, lines 47-58). Mehrotra discloses water is used as the agglomeration agent because other types of binders will leave a residue on the agglomerated particles. (Column 5, line 65 to column 6, line 8).

Menashi discloses a process for producing non-porous, dense, silica particles wherein a dried cake is formed during an intermediate step. (Column 5, line 54 to column 6 line 5).

Gonzalez-Oliver discloses providing an oxidizing atmosphere with air, oxygen, chlorine, or a mixture of these gases with helium or argon and with other halogen compounds that contribute to dehydroxylation of silica glass. (Column 12, lines 16-29).

The Examiner cited the Garcia reference for the proposition that fumed silica is hydrophilic in nature due to the large number of hydroxyl groups present on the surface when produced by hydrolysis of silicon tetrachloride in a flame process. (Examiner's Answer, page 9, second paragraph).

The Examiner asserts the claimed invention is unpatentable over the combination of Mehrotra, Menashi, Gonzalez-Oliver and Garcia. According to the Examiner, Mehrotra discloses a process for producing pure and dense amorphous synthetic silica by calcination of agglomerated particles of amorphous silica in two steps. (Examiner's Answer, pages 4 and 5). The Examiner asserts the process of Mehrotra differs from the claimed invention in (1) the formation of porous caked mass as in steps (a)-(c) and (2) the use of chlorine or thionyl chloride atmosphere for the first sintering step. (Examiner's Answer, page 7 first paragraph). To remedy the deficiencies of Mehrotra, the Examiner relies on Menashi to provide motivation for the intermediate use of a dried silica cake; and the combination of

Garcia and Gonzalez-Oliver to provide motivation for using a chlorine or thionyl chloride atmosphere in the calcination process.

Gonzalez-Oliver discloses that gases such as chlorine provide an oxidizing atmosphere which is suitable for dehydroxylation of silica glass. Mehrotra discloses that an inert atmosphere is important during calcination, especially at temperature greater than 1000°C, so as to reduce devitrification and reduce the formation of crystalline phases. (Column 5, lines 47-58). Mehrota teaches away from using an oxidizing atmosphere. The Examiner has not satisfactorily explained why the applied references would have fairly suggested to one of ordinary skill in the art the need of an oxidizing atmosphere for dehydroxylation of silica during calcination given Mehrotra's teachings regarding the elimination of oxidizing gases such as air and oxygen. The Examiner has not established that a chlorine atmosphere would have been considered, by one of ordinary skill in the art, to be a suitable substitute for the inert atmosphere of Mehrotra on this record. This is especially so given the differences of the starting materials and the process of Gonzalez-Oliver and Mehrotra. We therefore reverse the rejection of claims 1, 3 and 4.

In the absence of sufficient factual evidence or scientific rationale to establish why and how a skilled artisan would have arrived at the subject matter of claims 1, 3 and 4 from the combination of Mehrotra, Menashi, Gonzalez-Oliver and Garcia., we find that the initial

burden of establishing the ***prima facie*** obviousness of the claimed subject matter has not been met. The 35 U.S.C. § 103 rejection of claims 1, 3 and 4 is reversed.

CONCLUSION

The rejection of claims 1, 3 and 4 as unpatentable under 35 U.S.C. § 103 over the combination of Mehrotra, Menashi, Gonzalez-Oliver and Garcia is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)
PETER F. KRATZ Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
JEFFREY T. SMITH Administrative Patent Judge	)

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