

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 July 2006 (06.07.2006)

PCT

(10) International Publication Number  
**WO 2006/071529 A1**

(51) International Patent Classification:

**B03B 7/00** (2006.01) **A61K 8/00** (2006.01)  
**B07B 9/00** (2006.01) **A61K 8/18** (2006.01)  
**C01B 33/12** (2006.01)

(21) International Application Number:

PCT/US2005/045188

(22) International Filing Date:

12 December 2005 (12.12.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

11/020,933 23 December 2004 (23.12.2004) US

(71) Applicant (for all designated States except US): **J.M. HUBER CORPORATION** [US/US]; A Corporation of the State of New Jersey, 333 Thornall Street, Edison, New Jersey 08837 (US).

(72) Inventors: **McGILL, Patrick, Donald**; 2215 Price Road, Darlington, MD 21034 (US). **CORNELIUS, John, Mark**; 3408 Baywood Drive, Forest Hill, MD 21050 (US).

(74) Agents: **NIEVES, Carlos, Esq.** et al.; J.M. Huber Corporation, 333 Thornall Street, 10th Floor, Edison, New Jersey 08837 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS OF PRODUCING IMPROVED CLEANING ABRASIVES FOR DENTIFRICES

(57) Abstract: A method of making precipitated silica abrasive compositions having excellent cleaning performance and lower abrasiveness with post-reactor sizing of the abrasive particles being performed via air classification techniques is provided. By targeting a specific particle size range, it has been determined that higher pellicle film cleaning levels may be achieved without also increasing the dentin abrasion properties of the silica products themselves. As a result, dentifrices including such classified abrasive silica products, and exhibiting particularly desirable cleaning benefits, can be provided for improved tooth polishing, whitening, and the like, without deleteriously affecting the hard tooth surfaces. Also encompassed within this invention also are products of this selective process scheme and dentifrices containing such classified silica products.

WO 2006/071529 A1