(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 December 2004 (16.12.2004)

PCT

(10) International Publication Number
WO 2004/108621 A3

(51) International Patent Classification[7]: C04B 14/00

(21) International Application Number: PCT/US2004/016266

(22) International Filing Date: 20 May 2004 (20.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/249,935 30 May 2003 (30.05.2003) US
10/249,930 30 May 2003 (30.05.2003) US

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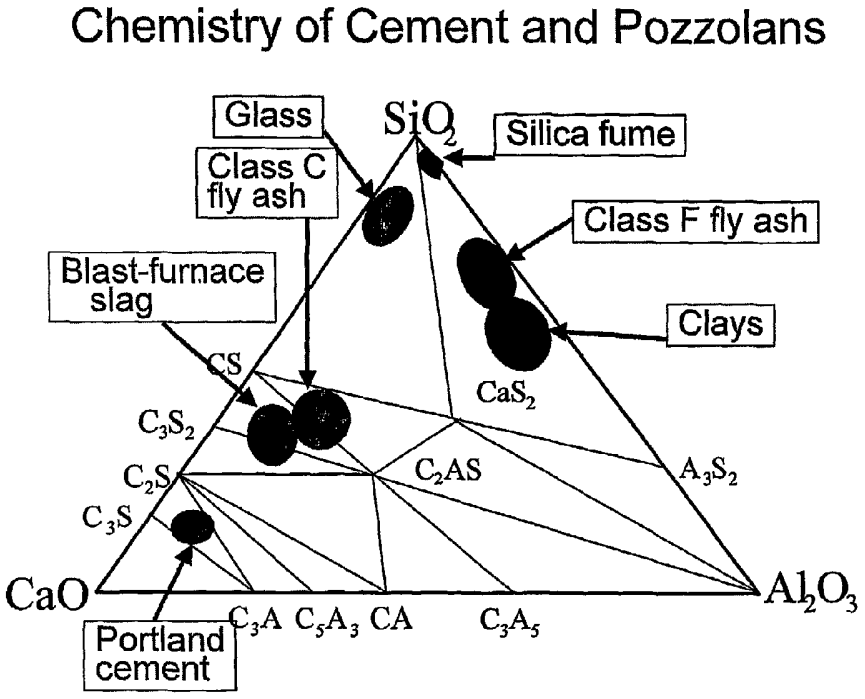
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, 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, IT, LU, 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).

[Continued on next page]

(54) Title: PROCESS FOR FLY ASH BENEFICIATION



(57) Abstract: A process is disclosed for converting low reactive fly ash to a highly reactive pozzolanic material by heating the fly ash until at least a portion of the fly ash melts; then rapidly cooling the fly ash. The resulting vitrified fly ash has improved cementitious properties relative to untreated fly ash.

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations 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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *of inventorship (Rule 4.17(iv)) for US only*

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*

(88) Date of publication of the international search report:
16 June 2005

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/16266

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : C04B 14/00
US CL : 106/705
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 106/705

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,584,255 A (BISHOP et al.) 17 December 1996, see entire document.	1-19
Y	US 5,521,132 A (TALMY et al.) 28 May 1996, see entire document.	1-19
Y	US 4,977,837 A (ROOS et al.) 18 December 1990, see entire document.	1-19
Y	US 5,935,885 A (HNAT et al.) 10 August 1999, see entire document.	1-19
Y	US 5,616,160 A (ALEXANDER et al.) 01 April 1997, see entire document.	1-19
Y	ITO, "Vitrification of fly ash by swirling flow furnace", Waste Mgmt. (Oxford) 1997, Vol. date 1996, 16 (5/6), 453-460..	1-19
Y	HIGASHI et al., Proceedings, ISWA International Congress and Exhibition, 7th, Yokohama, Oct 27-Nov 1, 1996 Meeting date 1996, Vol. 2 II/24-II/242.	1-19
Y	BARBIERI et al., Vitrification of fly ash from thermal power stations, Glass Technology 1997, 38(5), p. 165-170.	1-19
Y	MILOSAVLJEVIC et al., Flash vitrification of fly ash, REWAS-Global symposioum on Recycling Wast TRMT, 1999.	1-19

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search
30 March 2005 (30.03.2005)

Date of mailing of the international search report
11 APR 2005

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Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/16266

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	NAKA et al., DE 19630151, 30 January 1997, see entire document.	1-19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/16266

Continuation of B. FIELDS SEARCHED Item 3:
USPAT; USPG-PUB; DERWENT; JPO; EPO: vitrif; fly; ash; glass; cement; cementitious; calcium; hydroxide; calc; vitreous