

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 January 2008 (17.01.2008)

PCT

(10) International Publication Number
WO 2008/008940 A3

(51) International Patent Classification:
B01D 37/02 (2006.01) **C02F 1/00** (2006.01)

(74) Agent: **STANLEY, Robert, C.**; Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., 901 New York Avenue, N.W., Washington, DC 20001 (US).

(21) International Application Number:
PCT/US2007/073439

(22) International Filing Date: 13 July 2007 (13.07.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/830,781 14 July 2006 (14.07.2006) US
60/945,954 25 June 2007 (25.06.2007) US

(71) Applicant (for all designated States except US): **WORLD MINERALS, INC.** [US/US]; 130 Castilian Drive, Santa Barbara, CA 93109 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HU, Qingchun** [US/US]; 616 Colbert Drive, Lompoc, CA 93436 (US). **NYAMEKYE, George, A.** [US/US]; 2045 Mariah Drive, Santa Maria, CA 93454 (US). **REES, Robert, H.** [US/US]; 4367 Manchester Court, Santa Maria, CA 93455 (US). **MASTRUP, Niels, S.** [US/US]; 4344 Carolyne Way, Santa Maria, CA 93455 (US). **TIHOMIROV, Larisa** [US/US]; 815 East Airport Avenue, Lompoc, CA 93436 (US). **PAVLAKOVICH, Walter, N.** [US/US]; 1155 Clubhouse Drive, Santa Maria, CA 93455 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, MT, 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).

Published:
— with international search report

(88) Date of publication of the international search report:
10 April 2008

(54) Title: COMPOSITION FOR FILTERING AND REMOVING PARTICLES AND/OR CONSTITUENTS FROM A FLUID

(57) Abstract: Filter-aid materials are disclosed herein, and processes, systems, and methods using such filter-aid materials for filtering and removing particles and/or constituents from a fluid, wherein the filter-aid material comprises at least one filterable composite adsorbent comprising at least one adsorbent component formed in-situ on at least one filtration component. Further disclosed herein are filter-aid materials and processes, systems, and methods using such filter-aid materials for filtering and removing particles and/or constituents from a fluid, wherein the filter-aid material comprises at least one filterable composite adsorbent comprising at least one adsorbent component formed in-situ on at least one filtration component, and wherein the filter-aid material further comprises an at least one additional filtration component mixed with the at least one filterable composite adsorbent.



WO 2008/008940 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/73439

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B01D 37/02; C02F 1/00 (2007.10)

USPC - 210/778; 210/777

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)

USPC- 210/778; 210/777

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

USPC: all subclasses of 210 - see keywords below

google scholar - see keywords below

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

PubWEST (USPT, PGPB, EPAB, JPAB); Google Scholar

Search Terms Used: filter material, liquid, fluid, adsorbent, polymer, perlite, silica gel, diatomic, particle size, septum, surface area, permeability, Darcy, BET, beer, Nyamekye

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,712,898 B2 (PALM et al.) 30 March 2004 (30.03.2004), entire document, especially: col 1, ln 33-34; col 2, ln 4-6, 13-14; col 8, ln 51-53; col 10, ln 27; col 14, ln 16, 49, 59-60.	1-53 and 64-89
Y	US 6,712,974 B1 (PALM et al.) 30 March 2004 (30.03.2004), entire document, especially: col 1, ln 20, 25, 26; col 3, ln 49-60; col 5, ln 43-46, 54-60, 67; col 7, ln 59-60, 63; col 10, ln 27, 34; col 11, ln 19; col 13, ln 23-28.	1-89
Y	US 5,017,354 A (SIMMS et al.) 21 May 1991 (21.05.1991), entire document, especially: col 1, ln 13-26, 30-31.	54-63

☐ Further documents are listed in the continuation of Box C.


* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

30 October 2007 (30.10.2007)

Date of mailing of the international search report

06 DEC 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774
