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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, 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, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
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7 August 2008



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(54) **Title:** SILOXANE POLYMERIZATION IN WALLBOARD

(57) **Abstract:** Polymerization of siloxane is improved using a gypsum-based slurry that includes stucco, Class C fly ash, magnesium oxide and an emulsion of siloxane and water. This slurry is used in a method of making water-resistant gypsum articles that includes making an emulsion of siloxane and water, then combining the slurry with a dry mixture of stucco, magnesium oxide and Class C fly ash. The slurry is then shaped as desired and the stucco is allowed to set and the siloxane polymerizes. The resulting product is useful for making a water-resistant gypsum panel having a core that includes interwoven matrices of calcium sulfate dihydrate crystals and a silicone resin, where the interwoven matrices have dispersed throughout them a catalyst comprising magnesium oxide and components from a Class C fly ash.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 06/21793

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8): C04B 11/02, 28/00, 24/00, 24/42 (2006.01) USPC: 264/86, 87, 236, 347; 162/164.4, According to International Patent Classification (IPC) or to both national classification and IPC</p>												
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) USPC: 264/86; 264/87, 264/236, 264/347, 162/164.4, 162/187</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Thomson dialog, google scholar</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Electronic database : USPTO WEST (PGPUB, USPT, EPAB, JPAB). Search terms: Siloxane, slurry, silicon and stucco and fly ash and magnesium oxide, silicon and stucco and magnesium oxide, siloxane? and magnesium oxide, fly ash, MgO, ash or stucco and emulsifier and biocides and dispersants and strength enhancers, magnesium oxide.</p>												
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>US 5,817,262 A (Englert) 06 October 1998 (06.10.1998), col 2, lines 60-67; col 3, lines 01-09, 40-45; col 7, lines 43-45; col 8, lines 27-44; col 4, lines 14-23; col 7, lines 61-64; col 7, lines 47-49; col 7, lines 38-40; (col 8, lines 01-24; col 7, lines 25-28; col 10, lines 22-24;</td> <td>1-19</td> </tr> <tr> <td>Y</td> <td>US 4,350,533 A (Galer et al.) 21 September 1982 (21.09.1982), col 6, lines 47-49; col 7 and 8, lines 18-43; col 1, lines 19-28;</td> <td>1-19</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US 5,817,262 A (Englert) 06 October 1998 (06.10.1998), col 2, lines 60-67; col 3, lines 01-09, 40-45; col 7, lines 43-45; col 8, lines 27-44; col 4, lines 14-23; col 7, lines 61-64; col 7, lines 47-49; col 7, lines 38-40; (col 8, lines 01-24; col 7, lines 25-28; col 10, lines 22-24;	1-19	Y	US 4,350,533 A (Galer et al.) 21 September 1982 (21.09.1982), col 6, lines 47-49; col 7 and 8, lines 18-43; col 1, lines 19-28;	1-19	
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>												
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent but published on or after the international filing date	"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	"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)	"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	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
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"P" document published prior to the international filing date but later than the priority date claimed												
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<p>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</p>		<p>Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>										