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| (51) International Patent Classification <sup>6</sup> :<br>C04B 14/04, 22/00, 22/06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | A1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (11) International Publication Number: <b>WO 96/35648</b><br>(43) International Publication Date: 14 November 1996 (14.11.96) |
| (21) International Application Number: PCT/US96/02928<br>(22) International Filing Date: 4 March 1996 (04.03.96)<br>(30) Priority Data:<br>08/438,291                      10 May 1995 (10.05.95)                      US<br>(71) Applicant: W.R. GRACE & CO.-CONN. [US/US]; 1114<br>Avenue of the Americas, New York, NY 10036 (US).<br>(72) Inventors: GAIDIS, James, Michael; 15012 Kenwood Court,<br>Woodbine, MD 21797 (US). GARTNER, Ellis, Martin;<br>1105 Tanley Road, Silver Spring, MD 20904 (US).<br>(74) Agent: TROFFKIN, Howard, J.; W.R. Grace & Co.-Conn.,<br>7500 Grace Drive, Columbia, MD 21044 (US). | (81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY,<br>CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS,<br>JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD,<br>MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD,<br>SE, <del>SG</del> SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO<br>patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM,<br>AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT,<br>BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,<br>NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,<br>GN, ML, MR, NE, SN, TD, TG).<br><br>Published<br>With international search report. |                                                                                                                               |
| (54) Title: CONTROL OF EXPANSION IN CONCRETE DUE TO ALKALI SILICA REACTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                               |
| (57) Abstract<br><br>A cement composition including spodumene which has been heated to at least 1000 °C which is capable of inhibiting expansion of the concrete due to the alkali-silica reaction. The present invention also provides a method of reducing expansion in cement compositions.                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                               |