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(54) **COMPLEX ADMIXTURE AND METHOD OF CEMENT BASED MATERIALS PRODUCTION**

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(58) **Field of Search** **106/705, 713, 106/714, 715, 718, 719, 724, 726, 735, 737, 820, 823, DIG. 1, DIG. 2**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,297,309 A 10/1981 North
4,441,929 A 4/1984 Marcellis et al.
4,460,720 A 7/1984 Gaidis et al.
4,704,415 A 11/1987 Pierce et al.
4,829,107 A * 5/1989 Kindt et al. 524/3
4,931,098 A * 6/1990 Danielssen et al. 106/638
5,192,366 A * 3/1993 Nishioka et al. 106/724
5,227,351 A 7/1993 Gasper-Galvin et al.
5,275,652 A * 1/1994 Dastol 106/482
5,302,200 A * 4/1994 Smetana et al. 106/482
5,405,535 A 4/1995 Yamamoto
5,466,289 A 11/1995 Yonezawa et al.
5,472,501 A * 12/1995 Dastol 106/823
5,494,516 A 2/1996 Drs et al.
5,584,920 A 12/1996 Sawatzky et al.
5,588,990 A * 12/1996 Dongell 106/716
5,601,643 A 2/1997 Silverstrim et al.
5,685,903 A 11/1997 Stav et al.
5,735,947 A 4/1998 Hopkins et al.

5,843,216 A * 12/1998 Dastol 106/819
5,853,475 A 12/1998 Liskowitz et al.
5,976,240 A * 11/1999 Vezza 106/694
6,086,669 A * 7/2000 Patkar et al. 106/491
6,379,456 B1 * 4/2002 Heathman et al. 106/724

FOREIGN PATENT DOCUMENTS

EP 0431600 B1 * 7/1994
JP 61209939 * 9/1986
JP 63225564 * 9/1988
JP 06024814 * 2/1994
JP 06256053 * 9/1994

OTHER PUBLICATIONS

“A Study of the Combined Inflow of Condensed Silicon Fume & Water Reducing Additives” Markestud Mater Street 1986(19), 109 p39-47.*
“Microsilica Based Admixtures for Concrete” Svenkered et al. Admixtures Concrete Proc. Int Symp. (1990) p 346-59.*
“Slump Retention of Fly Ash Lomote with or without Chemical Admixtures” RAVINA Concr. Int'l (1995), 17(4) 25-9.*
K. Sobolev and S. Soboleva, 92+ Grade High Performance Cement: Solution for Next Millennium, (unpublished) (No Date Available).
Ronin, Vladimir; Jonasson, Jan-Erik and Hedlund, Hans. “Advance Modification Technologies of the Portland Cement Based Binders for Different High Performance Applications”, 10th International Congress on the Chemistry of Cement, Jun. 2-6, 1997 (proceedings).
Wang, Jun-Feng. “High Performance Cementous Binder”, 10th International Congress on the Chemistry of Cement, Jun. 2-6, 1997 (proceedings).
Sivkov, Serge P; Mundstukov, Dmitry V.; Jemma, Imed. “Organo-Mineral Fillers for Cements” 10th International Congress on the Chemistry of Cement, Jun. 2-6, 1997 (proceedings).
Ioudovitch, B.E. et al. “Low-Water Requirement Binders as New-Generation Cements”, 10th International Congress on the Chemistry of Cement, Jun. 2-6, 1997 (proceedings).
Sobolev, K.G. “High Performance Cement for High Strength and Extreme Durability”.
Sobolev K.G. and Soboleva S.V. “High Performance Indigenous Cement”. XXIVth World Housing Congress, Ankara, 1996, pp. 189-202.
Sobolev K.G. and Soboleva S.V. “High Performance Cement: From Idea to Industrial Trials”. 7th International Conference of Management of Technology, Orlando, USA, 1998.
Sobolev K.G. and Soboleva S.V. “Environmental Aspects of High Performance Cement Production”, 1st International Symposium on Cement Industry, Assiut, Egypt, 1997.

* cited by examiner

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(57) **ABSTRACT**

The present invention relates to admixtures production and to a method of application of the admixtures in cement and concrete technology. The method allows production of high-strength and high durable cement based systems, as well as cement systems with specially designed properties of cheap high-volume mineral admixture cements.

78 Claims, No Drawings