



Patents ALERT

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Cement & Concrete Composites

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6372037**SET RETARDERS FOR FOAMED CEMENTS**

Stuart E. Lebo Jr., Shane L. Resch
USA

assigned to LignoTech USA Inc.

An improved non-dispersing set retarder additive for foamed cements, cement compositions containing the additive, and methods of cementing in a subterranean zone penetrated by a well bore are provided. The set retarder additive includes a blend of a sulfonated lignin, preferably a lignosulfonate, with an alkali lignin, preferably a kraft lignin, having an organic sulfur content of 0–3.5% by weight in a ratio of about 6:4 to 8:2. The methods are basically comprised of the steps of preparing a foamed cement composition comprised of hydraulic cement, a non-dispersing set retarder, sufficient water to form a slurry, sufficient gas to foam the slurry and a foaming and foam stabilising surfactant present in an amount sufficient to facilitate the formation of the foam and stabilise the foamed cement composition.

6372038**CONCRETE COMPOSITION FOR OVERLAY METHOD AND HARDENED PRODUCT THEREFROM**

Shoichi Kameta, Ryoichi Sato, Yoichi Abe, Makoto Tanimura, Tetsuro Niinuma, Hidemi Nakamura, Shoichi Ogawa
Japan

assigned to New Tokyo International Airport Authority

The invention provides a concrete composition used in an overlay method of construction which is used for improving a deteriorated paved surface and/or a paved layer, the concrete composition comprising a cement, a shrink-reducing agent, an expanding agent, a high performance AE water-reducing agent and an AE agent, wherein the cement is a normal portland cement and/or a low heat portland cement. The concrete composition used in an overlay method of construction is rich in the bonding strength between an existent paved layer and a new surface layer and is resistant to exfoliation, cracking of a new surface layer and wear.

6376581**CEMENT DISPERSANT, METHOD FOR PRODUCTION THEREOF, AND CEMENT COMPOSITION USING THE DISPERSANT**

Yoshio Tanaka, Akira Ohta, Tsuyoshi Hirata, Toru Uno, Tsutomu Yuasa, Hideyuki Tahara
Japan

assigned to MBT Holding AG

A cement dispersant having excellent ability to prevent slump loss and high water-reducing property which comprises a polycarboxylic acid type polymer having a specific molecular weight distribution, a method for the production thereof, and a cement composition using the dispersant are provided. The cement dispersant comprises as a main component thereof a polycarboxylic acid type polymer (A), having a weight average molecular weight in the range of 10,000–500,000 in terms of polyethylene glycol determined by gel permeation chromatography, and having a value determined by subtracting the peak top molecular weight from the weight average molecular weight in the range of 0–8000.

6383364**METHOD FOR CATHODIC PROTECTION OF REINFORCED CONCRETE**

Per Austnes
Norway
assigned to Optiroc AS

There is described a method of cathodic protection, electrochemical chloride extraction and realkalisation in reinforced concrete or similar materials, and also reinforcement and crack prevention in concrete, comprising the impressing of a direct voltage between the reinforcement in the concrete and a conductive device which is brought into contact with the surface of the concrete, and wherein the crack preventing effect is obtained by embedding the device in fresh concrete. The method is characterised in that as conductive device/current distributors there is used a mat of optionally coated, conductive carbon fibers produced by blowing, pressing, weaving or knitting so that the fibers lie in almost every direction, and wherein the fibers are of different thickness, wherein the mat further comprises electric con-

ductors in the form of bands or wires of conductive material which are placed over or under the mat or are incorporated therein.

6388038

METHOD FOR PRODUCING POLYCARBOXYLIC ACID FOR CEMENT DISPERSANT AND CEMENT COMPOSITION

Tsuyoshi Hirata, Tsutomu Yuasa, Katsuhisa Shiote, Koichiro Nagare, Syogo Iwai

Japan

assigned to Nippon Shokubai Company Ltd.

The present invention provides a method for producing a cement dispersant having high percentage in water reduction rate and appropriate air-entraining property. This method for producing a polycarboxylic acid for a cement dispersant is characterized in that alkylene oxide is added at a specific temperature range.

6391106

CEMENTITIOUS MIXTURE CONTAINING HIGH POZZOLAN CEMENT REPLACEMENT AND COMPATIBLIZING ADMIXTURES THEREFOR

John Moreau, Runhai Lu, Jeffrey R. Bury, Thomas M. Vickers Jr.

USA

assigned to MBT Holding AG

A cementitious mixture comprises a hydraulic cement; greater than about 10% by weight of a pozzolanic cement replacement selected from fly ash, slag, natural pozzolans, and mixtures thereof, based on the weight of said hydraulic cement and cement replacement; and a compatiblizing admixture, wherein the compatiblizing admixture comprises a compatiblizing derivatized polycarboxylate polymer dispersant capable of acting as a water reducer, in combination with an accelerator. The derivatized polycarboxylate dispersant, alone or in combination with other derivatized polycarboxylate dispersants, is a polymer comprising units derived from at least one of a substituted carboxylic acid monomer and a substituted ethylenically unsaturated

monomer, at least one of an *N*-polyoxyalkylene maleimide and a condensation product of an unsubstituted carboxylic acid monomer and an alkoxyalkylene primary amine substituted carboxylic acid monomer, and optionally including an unsaturated hydrocarbon. The derivatized polycarboxylate dispersant provides for a longer shelf life dispersant, improved dispersability of cementitious mixtures, water reduction in cementitious mixtures, and is an effective dispersant in high pozzolan replaced cementitious mixtures.

6398865

CEMENT COMPOSITION

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Japan

assigned to Dow Corning Toray Silicone Company Ltd.

A cement composition comprising (A) hydraulic cement, (B) a silicone oil emulsion containing crosslinked silicone particles with an average particle size of from 0.05 to 100 μm in drops of silicone oil with an average size of 0.1 to 500 μm dispersed in water, the particle size of the crosslinked silicone particles being smaller than the size of the silicone oil drops, in an amount such that the total weight of the silicone oil and crosslinked silicone particles in component (B) ranges from 0.1 parts by weight to 50 parts by weight per 100 parts by weight of component (A), and optionally (C) aggregate.

6399021

METHOD OF TREATING CONCRETE STRUCTURES

Robert L. Heimann, William M. Dalton, David R. Webb, Nancy M. McGowan

USA

assigned to Elisha Technologies Company LLC

A system is disclosed for inhibiting the corrosion of ferrous and other metals by passivating the metals. The system includes novel buffered compositions which may be applied to metal products, and novel combinations thereof with metals, for preventing or retarding

corrosion, as well as methods for applying the buffered compositions to metal products, such that corrosion protection of the products is achieved. The methods include an in situ application to existing structures with metal reinforcement as well as applications to metal products during manufacture. Generally, the compositions may be in various forms and comprise one or more layers, at least one of which includes a water repellent but water vapor permeable carrier component and one or more pH buffer components. The buffer is selected to produce a passivating pH at the surface of the metal. The compositions are environmentally friendly and are capable of replacing chromates which have been traditionally used with zinc and zinc alloys to inhibit corrosion of metals but which are potentially harmful to the environment.

6399848

ENCAPSULATION OF HAZARDOUS WASTE MATERIALS

Dino Rechichi

Australia

assigned to Dolomatrix International Ltd.

A method of encapsulating hazardous waste materials including heavy metals such as arsenic, mercury, nickel and chromium residues, as well as radioactive materials. The method involves adding the hazardous waste material to a settable composition, forming a slurry, and allowing the slurry to set to encapsulate the waste material. The settable composition is a powdered flowable cement composition containing calcium carbonate and a caustic magnesium oxide. Tests conducted on the encapsulated material indicate that virtually none of the hazardous waste material is leached out of the set composition which has a concrete-like appearance.

6406534

RAPID HARDENING, ULTRA-HIGH EARLY STRENGTH PORTLAND-TYPE CEMENT COMPOSITIONS, NOVEL CLINKERS AND METHODS FOR THEIR MANUFACTURE WHICH REDUCE HARMFUL GASEOUS EMISSIONS

Hassan Kunbargi

USA

Clinkered materials containing high concentrations of $\{(C,K,N,M)_4(A,F,Mn,P,T,S)_3Cl,S\}$ (crystal X), and $\{(C_2S)_3Ca(F,Cl)_2\}$ or $C_9S_3S_3Ca(F,Cl)_2$ (crystal Y), and/or $\{C_5S_2\}$ (crystal Z) directly from the kiln, rapidly hardening ultra-high early strength cement including these clinkered materials, methods for forming and using said compositions and the cements so produced are claimed. The methods include the steps of forming a mixture of raw material containing CaO, MgO, Al_2O_3 , Fe_2O_3 , TiO_2 , Mn_2O_5 , SiO_2 , SO_3 , Na_2O , K_2O , P_2O_5 and F, respectively designated as C, M, A, F, T, Mn, S, S, N, K, P and F, and heating said mixture to an elevated temperature between 900 and 1200°C before determining average amount of crystals X, Y and Z. Final mixtures comprising these clinkers and hydraulic or portland type cement are made to produce cement compositions having crystal X concentrations of approximately 5% to 35% by weight, crystal Y concentrations of approximately 5% to 40% by weight, and/or crystal Z concentrations of approximately 5% to 40% by weight, with the remainder being hydraulic or portland type cement. The cements so produced are rapid hardening and exhibit high strengths ranging from 2000 to 7000 psi in 1 h, 6000 to 8000 psi in 1 day and 9000 to 12,000 psi in 28 days. They are sulfate and seawater attack resistant and have low heats of hydration, minimal shrinkage, and high water impermeability. The methods claimed also result in significant reduction in gaseous emissions including SO_x , NO_x and CO_x .