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6182758

DISPERSANT AND FLUID LOSS CONTROL ADDITIVES FOR WELL CEMENTS, WELL CEMENT COMPOSITIONS AND METHODS

Jan Pieter Vijn,
Great Britain
assigned to Halliburton Energy Services

Biodegradable dispersing and fluid loss control additives for well cements, well cement compositions including the additives and methods of using the well cement compositions are provided. The well cement compositions are basically comprised of a hydraulic cement, water in an amount sufficient to form a slurry and a dispersing and fluid loss control additive comprised of casein. A second agent which also provides fluid loss control can optionally be included in the additive.

6187382

LIQUID MEMBRANE-FORMING CURING COMPOSITION AND METHOD OF CURING FRESH CONCRETE

Donald V. Lightcap, Jr.,
USA

An improved liquid membrane-forming curing composition and a method of curing fresh concrete. The curing composition is effective for providing a membrane layer over the exposed surfaces of fresh concrete for retaining the water of hydration therein for the proper curing of the concrete. In a preferred embodiment, the curing composition comprises a vegetable oil, preferably a non-refined vegetable oil such as coconut oil, corn oil, cottonseed oil, palm oil, rapeseed (canola) oil, soya oil, sunflower oil, and mixtures thereof; a surfactant effective for providing a stable oil-in-water emulsion, a drying agent, and water.

6187841

CEMENT COMPOSITION USING THE DISPERSANT OF (METH)ACRYLIC ESTERS, (METHA)ACRYLIC ACIDS POLYMERS

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 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 0–8000.

6190451

ADMIXTURE OF CEMENT COMPOSITION

Sumio Soya, Makoto Saito, Tohru Yamamoto, Yasuhito Wakabayashi
Japan
assigned to Showa Denko Kabushiki Kaisha

An additive for an admixture of a cement composition, especially, a retarder of a cement composition, capable of exhibiting excellent retardation effect with a smaller addition amount and easily controlling the retardation time by adjusting the addition amount. An admixture of a cement composition, comprising a cement and at least one iminodiacetic acid or salt thereof represented by formula (I): ##STR1## wherein the M groups each independently represents a hydrogen atom, an alkali metal atom, an ammonium group or a substituted ammonium group; Y represents a divalent alkyl group having from 1 to 5 carbon atoms and the divalent alkyl group may be substituted by a hydroxyl group or a COOM group wherein M represents a hydrogen atom, an alkali metal atom, an ammonium group or a substituted ammonium group; and W represents a hydrogen atom, a hydroxyl group or a COOM group wherein M represents a hydrogen atom, an alkali metal atom, an ammonium group or a substituted ammonium group.

6197107

GYPSUM-RICH PORTLAND CEMENT

Elisha Stav, Meir Gamliel Goldgraber,
Israel
assigned to M. Gold Investments (1999)

The present invention is of a cementitious composition containing OPC, calcined gypsum, a source of amorphous silica and a source of amorphous alumina. The ratio of calcium sulfate to OPC is 0.7:1.0 to 1.4:1.0,

the ratio of amorphous silica and amorphous alumina to OPC is 0.26:1.0 to 0.4:1.0, and the ratio of amorphous alumina to amorphous silica is 0.3:1.0 to 1.5:1.0. The cementitious composition, by itself and mixed with aggregates, is fast-setting and exhibits good early compressive strength and very high compressive strength after hydration. Despite the high content of calcium sulfate relative to prior art OPC formulations, the cementitious composition according to the present invention is essentially waterproof and exhibits excellent strength characteristics, even after 2 years under water. The use of calcined gypsum in place of alumina cement or even OPC is of great economic advantage, and in addition, provides the cementitious composition with quick-setting characteristics.

6197423

MICRO-DIASTROPHIC SYNTHETIC POLYMERIC FIBERS FOR REINFORCING MATRIX MATERIALS

Klaus-Alexander Rieder, Neal S. Berke, Stephen J. Fyler
USA
assigned to W.R. Grace and Company-Conn.

Exemplary mechanically flattened fibers of the invention comprise generally elongate bodies having varied width or thickness dimensions and micro-diastrophic surface deformities. Preferred fibers are elongate synthetic polymer or multipolymer blend fibers for reinforcing matrix materials such as concrete, shotcrete, gypsum-containing materials, asphalt, plastic, rubber, and other matrix materials. Preferred methods for manufacturing such fibers comprise subjecting synthetic polymer fibers to compressive forces sufficient to achieve flattening and surface micro-diastrophism without substantially shredding and abrading the fibers.

6200381

SETTABLE COMPOSITION AND USES THEREFORE

Dino Rechichi,
Australia
assigned to Periclase Pty.

A dry powdered flowable cement composition contains calcium carbonate and a partially decarbonated magnesium carbonate. A slurry of the composition will set hard with various organic fillers including waste products and toxic waste. The composition can be slurried with contaminated water such as sea water, mineral laden ground water and muddy water. A high percentage of filler can be added while still having an acceptable set.

6200678

CORROSION RESISTANT COATED METAL STRAND

Frederick F. Hunt, Donald J. Gillette
USA
assigned to Florida Wire and Cable

Concrete strengthening members, particularly prestressing tendons such as strands of steel wire, are provided with a strongly adherent plastic coating which may be substantially impermeable for improved corrosion resistance, and/or which may have embedded therein abrasive or grit-form particles to provide improved bond with the concrete, and particularly to provide controllable bond transfer in prestressing tendons of the pre-tensioned type. The plastic coating preferably is applied electrostatically in powder form, and fusion bonded by heat. The abrasive can be applied by spraying during a viscous state of the heated resin, and can be varied as to size and spacing density so as to control the surface condition and the bonding effect. Fusion and curing heat may come from preheating of the member before application of the resin powder, which preferably is a heat curable, thermosetting epoxy. Coating thickness and grit application are readily variable to meet particular requirements. Particularly advantageous results are achievable for high strength steel strands for prestressing concrete by pretensioning, facilitating their use where previously considered impractical or impossible.

6203609

FIBER REINFORCED CELLULAR CONCRETE

Magdiel Castro, Osvaldo Moran
USA

The present fiber reinforced cellular concrete is produced through a chemical reaction that does not require high heat or pressure ovens (autoclaves). Among its unique features, is the fact that different compression strengths can be obtained by varying the proportion of ingredients and resulting densities. The concrete utilizes a base of a pozzolanic product with aluminum powder, calcium carbonate, calcium formate, cement, and polypropylene fiber is added, along with water. Option-

ally, sand and compatible reinforcing material can also be added.

6213754

APPARATUS FOR MANUFACTURING CONCRETE MASONRY UNITS

Steven Everett Doty, Robert Jeffry Maddy
USA

A cementitious composition for the molding of ultra-lightweight, durable, large structural units comprising Portland cement, coal combustion by-products, expanded or extruded polystyrene and water, and a modified block machine used in the manufacture of such structural units.

6214158

HIGH TEMPERATURE CARBONACEOUS CEMENT

Charles Chi-Chieh Chiu, Irwin Charles Lewis, Richard Thomas Lewis
USA
assigned to UCAR Carbon Company

A curable, high temperature, carbonaceous, cement paste composition comprising a catalyst; a carbon filler present in an amount of about 20 to about 60 wt%; a polymerizable monomeric system present in an amount of about 7 to about 30 wt% comprising a dialkyl ester of an aromatic tetracarboxylic acid, an aromatic diamine, and a monoalkyl ester of an acid selected from the group consisting of 5-norbornene-2,3-dicarboxylic acid and phthalic acid; and a furan solvent present in an amount of about 20 to about 60 wt%. The most preferred embodiment comprising a monomeric system comprising a dimethyl ester of 3,3',4,4'-benzophenonetetracarboxylic acid, 2,2'-bis (4-[4-aminophenoxyl]phenyl)propane and a monomethyl ester of 5-norbornene-2,3-dicarboxylic acid with furfuryl alcohol and a catalytic solution of about 50% ZnCl.sub.2, has a glass transition temperature of about 280 °C after curing by heating at about 2 °C/min to about 240 °C and holding for about 2 h. Upon curing, the cement paste composition maintains a strength of at least about 2000 psi at room temperature after heat treatment at about 3000 °C even when cured at a substantially lower temperature of at least about 200 °C Subsequent heating of the monomeric binder causes further cross-linking producing a stronger and more stable cement for use at service temperatures greater than the initial glass transition temperature of the cured cement. The curable cement composition may be used along with a pre-coat in an adhesive system for attaching together carbon bodies. Most preferably, the pre-coat comprises about 27 wt%, of a monomeric system comprising a dimethyl ester of 3,3',4,4'-benzophenonetetracarboxylic acid, 2,2'-bis (4-[4-aminophenoxyl]phenyl)propane and a monomethyl ester of 5-norbornene-2,3-dicarboxylic acid dissolved in about 65 to about 85 wt% furfuryl alcohol. A method of making the cement paste composition is also described.

6214965

PROCESS FOR PREPARING AN AQUEOUS SOLUTION OF SULFANILIC ACID MODIFIED MELAMINE-FORMALDEHYDE RESIN AND A CEMENT COMPOSITION

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assigned to Nissan Chemical Industries

The present invention relates to a process for preparing an aqueous solution of sulfonated melamine-formaldehyde resin, and a cement composition in which the solution and a setting retarder are added to a concrete, a mortar, a cement paste or the like. And the process comprises the following step (A), step (B) and step (C): Step (A): a step of adjusting an aqueous solution containing melamine (a), formaldehyde (b), sulfanilic acid (c) and an alkali substance (d) to (a):(b):(c) = 1:2.5–3.5:0.5–1.5 in molar ratio and its pH to 8.0–13.5, and thereafter heating the aqueous solution at 50–90 °C to conduct the reaction until free sulfanilic acid decreases to 40–90 mol% of the amount of sulfanilic acid charged; Step (B): a step of adding an inorganic acid to the reaction liquid obtained in the step (A) to adjust its pH to 6.0–8.0, and thereafter heating the reaction liquid at 50–90 °C to conduct the reaction until free sulfanilic acid decreases to 0–60 mol% of the amount of sulfanilic acid charged; Step (C): a step of adjusting a pH of the reaction liquid obtained in step (B) to 7.0–13.5.

6217742

CATHODIC PROTECTION SYSTEM

Jack E. Bennett,
USA

The present invention relates to a method of cathodic protection of reinforced concrete, and more particularly, to a method of improving the performance and service life of discrete anodes used in a cathodic protection

system. The method of the present invention comprises placing an embeddable discrete anode in, or on, the reinforced concrete member. The discrete anode is then embedded in a cementitous grout or mortar to encapsulate the anode and provide contact to complete the cathodic protection circuit. A lithium salt selected from the group consisting of lithium nitrate ($LiNO_3$), lithium bromide (LiBr), and combinations thereof, is added to the cementitous grout or mortar surrounding the discrete anode, in the amount of at least about 0.2 g (dry basis) per cubic centimeter of grout or mortar. The lithium salt functions to enhance the performance of the cathodic protection system by minimizing the deleterious effects of the anode reaction product on the grout or mortar adjacent to the anode. The use of the lithium salt as taught by the present invention results in lower operating voltage and longer service life.

6218002

CONCRETE MIX CONTAINING POLYSTYRENE BEADS

Erik W. Wehtje,
USA
assigned to Polysource

Substantially cylindrical unexpanded polystyrene beads with a diameter on the order of 1 mm and a length on the order of 3 mm are expanded into substantially cylindrical expanded polystyrene beads with a diameter between about 2 and 5 mm, and a length between about 4 and 10 mm. These expanded beads are well suited for use as a substitute for concrete aggregate to make lightweight concrete and concrete construction boards.

6221148

MANUFACTURE OF IMPROVED METAKAOLIN BY GRINDING AND USE IN CEMENT-BASED COMPOSITES AND ALKALI-ACTIVATED SYSTEMS

Sharad Mathur, Karen Ann Gruber, Harry J. Reid
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assigned to Engelhard Corporation

In one embodiment, the present invention relates to a method of making a highly reactive pozzolan, involving the steps of forming a slurry comprising metakaolin and a liquid; wet milling the slurry; and separating the metakaolin from the liquid to provide the highly reactive pozzolan. In another embodiment, the present invention relates to a method of making a cement-based composition involving the steps of providing a highly reactive pozzolan by forming a slurry comprising metakaolin and a liquid, wet milling the slurry, and separating the metakaolin from the liquid; and combining the highly reactive pozzolan with at least one cementitious material.

6221935

RESIN CONCRETE COMPOSITION AND MOLDED ARTICLE THEREOF

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assigned to Dainippon Ink and Chemicals

A resin concrete composition and its molded article are provided, the resin concrete, even with a reduced resin content, having an excellent flowability, which is an important property in a molding operation, and necessitating no shrinkage reduction agent, and the molded article having no cracks and being highly strong. The resin concrete composition comprises: (A) a resin composition containing (a) an unsaturated polyester of an unsaturated acid, a di- and/or trialkylene glycol, and dicyclopentadiene and (b) a polymerizable unsaturated monomer, (B) an aggregate, and (C) a filler.

6224943

METHOD FOR IMPROVING THE CORROSION RESISTANCE OF REINFORCED CONCRETE

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Germany
assigned to Grillo-Werke AG

The method for improving the corrosion resistance of reinforced concrete coated with a thermal spray coat of metals, especially of zinc or zinc alloys, is effected by electrically connecting said spray coat with the armour and additionally coating it with a polyurethane resin which is applied as a low-viscosity solution in organic solvents.