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Cement & Concrete Composites

PatentsALERT

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Cement & Concrete Composites

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6231663

METHOD FOR NEW CONCRETE FROM OLD CONCRETE

Robert L. Catterton, Tony H. Harris
USA

A method is described for making concrete mixture by blending new batch cement and fly ash with recycled concrete material (curb and gutter, sidewalk, brick, block, asphalt and various other concrete items). This new process will enable discarded concrete materials to be reused as a valuable product.

6231665

EFFLORESCENCE CONTROL IN CEMENTITIOUS COMPOSITIONS AND MASONRY UNITS

Awdhoot V. Kerkar, Vikram Kumar
USA
assigned to W. R. Grace and Company-Conn.

A cementitious composition is disclosed whereby visible efflorescence is prevented when formed into a cement masonry concrete unit. Efflorescence is controlled by incorporation of a polymer comprising a polyacrylic acid or salt or derivative thereof having an average molecular weight in the range of 5004–9000, and more preferably in the average molecular weight range of 1000 to 10,000.

6234251

RESILIENT WELL CEMENT COMPOSITIONS AND METHODS

Jiten Chatterji, Roger S. Cromwell, Baireddy R. Reddy, Bobby J. King
USA
assigned to Halliburton Energy Services Inc.

The present invention provides improved compositions and methods for sealing pipe in a well bore. The compositions which harden into highly resilient solid masses having high strengths are basically comprised of a hydraulic cement, an aqueous rubber latex, an aqueous rubber latex stabilizing surfactant and silica hydrophobicized with silicon oil.

6235814

USE OF POLYMERS IN MASONRY APPLICATIONS

Michael Damian Bowe
USA
assigned to Rohm and Haas Company

The use of polymers in masonry applications such as cement modifiers, cement roof tile modifiers, cement roof tile slurry coatings, and cement roof tile coatings is disclosed. The compositions utilized provide improved water absorption and water vapor transmission rates as well as improved flexural strength.

6238474

QUICK-SETTING, HYDRAULIC BINDING AGENT

Joachim Unsin
Germany
assigned to Heidelberger Zement AG

The present invention concerns a quick-setting, hydraulic binding agent, containing calcium silicate cement, in particular Portland cement, reactive calcium aluminates, in particular high alumina cement, as well as, if required, known additives and/or admixtures, which is characterized by a content of: (a) 0.1–2.0% by volume of an organic and/or inorganic accelerator for hydrating the calcium silicates, (b) 0.10–2.00% by volume of an organic and/or inorganic setting retarder inhibiting the hydration of the calcium silicates, if required, having a liquefying effect, (c) 0.01–0.05% by volume of an organic and/or inorganic setting accelerator for hydrated calcium aluminate, and (d) 0.01–0.20% by volume of an inhibitor with respect to formation of the hydrated calcium aluminum sulfates.

6238766

MOISTURE BARRIER PROTECTION SYSTEM AND METHOD

Peter J. Massett, Paul J. Blasdel
USA
assigned to Socopac Company

A tough, high-strength geomembrane made from a custom blend of polyethylene copolymers, for protecting waterproofing courses from impact and pressure damage of debris resting against the waterproof course.

A slip sheet configuration reduces surfaces stress due to earth movement and subsurface cracking thereby maintaining the protective course intact without any effect on the waterproofing layers. The geomembrane is available as lightweight rolls which can be easily be handled by one man. The film is installed horizontally in continuous sheets with few adhesive joints. Installation begins by applying a thick brush coat of the selected waterproofing membrane material (usually a rubber coat but may be any waterpoofing material). The film is unrolled along the wall, held up into position and secured using plastic self-sealing plugs and/or plastic termination bars. Concrete nails are used to attach the self-sealing plugs or termination bar to the wall. If termination bar is selected the film is extended up beyond the bar approximately 8 in. and folded down over the termination bar after attachment. Staples into the termination bar can be used to hold the film down creating a nicely detailed upper edge.

6241815

GYPSUM–CEMENT SYSTEM FOR CONSTRUCTION MATERIALS

David Bonen
USA
assigned to United States Gypsum Company

A composition for use in construction materials, which may be substituted for high performance concrete, patching materials, joint compounds, and the like, such as backer boards or panels, which includes a settable calcium sulfate, preferably a hemihydrate, Portland cement, a finely divided pozzolanic material, lime, and an aggregate, optionally including other additives. The volume ratio of the aggregate to the combined calcium sulfate, Portland cement, pozzolanic material, and lime (a cementitious binder) is equal to or greater than 2/1. Panels made from this composition are useful, particularly when exposed to water since they have good dimensional stability.

6244343

CEMENTING IN DEEP WATER OFFSHORE WELLS

Lance E. Brothers, Anthony V. Palmer
USA
assigned to Halliburton Energy Services Inc.

An improved method of cementing casing in a deep water offshore formation penetrated by a well bore comprising the steps of preparing a foamed cement composition comprised of calcium aluminate cement, a set accelerating additive, a thickening time increasing additive, water, gas, and a mixture of foam forming and foam stabilizing surfactants; placing the cement composition in the annulus between the casing and well bore; and allowing the cement composition to set into a hard impermeable mass therein.

6244344

METHODS AND COMPOSITIONS FOR CEMENTING PIPE STRINGS IN WELL BORES

Jiten Chatterji, Roger S. Cromwell, Robert D. Kuhlman, Bobby J. King
USA
assigned to Halliburton Energy Services Inc.

The present invention provides improved methods and compositions for cementing pipe strings in well bores. The methods of the invention are basically comprised of preparing a cement composition comprised of a hydraulic cement, an epoxy resin, a hardening agent for the epoxy resin and sufficient water to form a pumpable slurry. Thereafter, the cement composition is introduced into the annulus between a pipe string and a well bore and the cement composition is allowed to set into a resilient impermeable solid mass.

6251178

FLY ASH COMPOSITION

Robert William Styron
USA
assigned to Mineral Resource Technologies LLC

A fly ash composition is provided which includes an amount of lithium carbonate to reduce alkali silica reactivity when the fly ash composition is used in concrete applications. The fly ash composition includes from about 0.5 to 98% wt.% subbituminous fly ash and from about 0.5 to 3 wt.% lithium carbonate.

6251179

THERMALLY CONDUCTIVE CEMENTITIOUS GROUT FOR GEOTHERMAL HEAT PUMP SYSTEMS

Marita Allan
USA
assigned to The United States of America as represented by the Department of Energy

A thermally conductive cement–sand grout for use with a geothermal heat pump system. The cement–sand grout contains cement, silica sand, a superplasticizer, water and optionally bentonite. The present invention also includes a method of filling boreholes used for geothermal heat pump systems with the thermally conductive cement–sand grout. The cement–sand grout has improved thermal conductivity over neat cement and bentonite grouts, which allows shallower bore holes to be used to provide an equivalent heat transfer capacity. In addition, the cement–sand grouts of the present invention also provide improved bond strengths and decreased permeabilities. The cement–sand grouts can also contain blast furnace slag, fly ash, a thermoplastic air entraining agent, latex, a shrinkage reducing admixture, calcium oxide and combinations thereof.

6251180

SHRINKAGE-REDUCING AGENT FOR CEMENT COMPOSITIONS

Jens Engstrand, Carl-Axel Sjogreen
Sweden
assigned to Perstorp AB

Shrinkage-reducing agent intended as additive in aqueous cement comprising compositions. The agent comprises at least one acetal, preferably a cyclic formal, of a tri- or polyhydric alcohol, which acetal comprises at least one 1,3-dioxa group. The acetal has preferably a water solubility of at least 1%. The agent can, in addition to said acetal, comprise at least one amorphous silica, preferably a powderous silica. The invention refers in a further aspect to the use of said agent in said compositions. The agent is, when used, added to said composition in an amount of 0.1–20% by weight.

6254752

PROCESS FOR ELECTROCHEMICAL TREATMENT OF CONCRETE

John B. Miller
Norway
assigned to Fosroc International Limited

An electrochemical process for the removal of chloride ions from reinforced concrete includes passing a direct current between (i) an anode in electrical contact with the adherent coating containing a water retaining adhesive material, and an aqueous electrolyte applied to an external surface of the concrete and (ii) a cathode which is located internally in the concrete. According to the process, chloride ions are caused to migrate to the anode. In order to reduce the production of chlorine gas, the coating contains, as a chlorine scavenger, solid calcium hydroxide or barium hydroxide, or mixtures thereof. The chlorine scavenger is most preferably present in an amount of at least 8%, and more preferably 20–50%, by weight based on the dry weight of the water retaining material.

6254817

REINFORCED CEMENTITIOUS BOARDS AND METHODS OF MAKING SAME

Ian Cooper, John F. Porter, Jeremy-Jon Hardy
Canada
assigned to Bay Mills Limited CertainTeed Corporation

A composite fabric for use in reinforcement, particularly tensile reinforcement, of cementitious boards and similar building wall panels. The fabric is constructed as a mesh of continuously coated, high modulus of elasticity strands. The high modulus strands are preferably bundled glass fibers encapsulated by alkali and water resistant thermoplastic material. The composite fabric also has suitable physical characteristics for embedment within the cement matrix of the panels or boards closely adjacent the opposed faces thereof. The fabric provides long-lasting, high strength tensile reinforcement of the panels or boards regardless of their spatial orientation during handling. The reinforcement also enhances the impact resistance of the boards after installation. Included as part of the invention are methods for making the reinforcement, cementitious boards and panels including the reinforcement, and methods for manufacturing such boards and panels.

6256937

PREVENTION OF DAMAGES OF CONSTRUCTION MATERIALS BY TERMITES

Naochika Kogure, Takashi Kitahama, Kiyotaka Nanama, Hiroyuki Gokuraku
Japan
assigned to JSP Corporation

Prevention of damage of wooden construction materials of a building by termites by laying one or more

panels each having a polycarbonate resin foam layer on the ground on which the building is constructed or by arranging such panels on surfaces of continuous footing of the building or of vertical concrete walls of the building. The concrete wall may be formed using modular concrete form structure units each having a pair of opposing side panels, with each side panel having a polycarbonate foam layer.

6258162

CEMENT COMPOSITION

Hirokatsu Kawakami, Hirokazu Niwa, Hiromichi Tanaka, Tsutomu Yuasa, Tsuyoshi Hirata
Japan
assigned to Nippon Shokubai Company Limited

The present invention provides a cement additive which can achieve excellent fluid retainability and has excellent mortar kneadability. The cement additive comprises copolymer (A) having polyalkylene glycol ester unit (I) and carboxylic unit (II) as repeating units, wherein polyalkylene glycol ester unit (I) has an oxyalkylene group with 3–7 carbon atoms on an ester bonding moiety.

6258236

PROCESS FOR THE ELECTROCHEMICAL TREATMENT OF CONCRETE

Pamela Hird
Great Britain
assigned to Fosroc International Limited

A process for the electrochemical realkalization of reinforced concrete comprises passing a direct electric current between an anode associated with a layer of alkaline electrolyte applied to an external surface of the concrete and a cathode which is located internally in the concrete. The process causes the internal pH of the concrete to increase and a surface layer of the concrete to be impregnated with the electrolyte solution and which comprises a solution of potassium carbonate of concentration at least 0.3 M. The process may be applied to concrete a zone of which has a pH of less than 10.0 and the process continued until the pH reaches a level of at least 10.5, preferably at least 11.0.

6264738

METHOD OF PRODUCING CEMENT CLINKER AND ASSOCIATED DEVICE

Paul Lorke, Alexander Lorke
Germany
assigned to Paul Lorke, Alexander Lorke

Portland cement has hitherto been produced from finely ground raw meal with a residue on the 80 micron sieve of 10–20%, corresponding to a grain size ratio of 0.01–80 micron grains to 80.01–500 micron grains in the raw meal of 9:1–4:1. With the novel process, it should be possible to use coarse-ground raw meal. The process involves roasting the raw meal in which the grain size ratio in the basic raw meal components of the 0.01–80 micron grains to the 80.01–2000 micron grains is 1.5:1–1:9. The acidic raw meal components with a melting temperature of no higher than 1300 ^{o}C are ground to the same grain size ratio. Also described are devices and processes for grinding and roasting raw meal. The advantages of the invention are reduced energy consumption during grinding of the raw meal, improved throughput of material through ovens and mills and improved cement characteristics.

6264740

INORGANIC CEMENTITIOUS MATERIAL

William J. McNulty, Jr.

A method of producing a new type of cement, hereafter called Conch-krete. Conch-krete is created by adding sodium carbonate (also known as soda ash, natron, etc.) and one or more minerals from the calcium carbonate group (including aragonite, limestone, calcite, marble, dolomite, etc.) and the addition of water to the mix that will harden into a cement-like material. The combination of sodium carbonate and calcium carbonate can be either layered or in a mixed state. An exothermic reaction starts after the addition of water. The composition of Conch-krete can vary between 20% sodium carbonate and 80% calcium carbonate to 80% sodium carbonate and 20% calcium carbonate. Conch-krete can be used in a variety of applications not inclusive of forming bricks, interior architecture, table or counter tops, ornaments, repairing damaged cement

products, casting and other applications not mentioned above.

6268406

WELL CEMENTING METHODS USING COMPOSITIONS CONTAINING LIQUID POLYMERIC ADDITIVES

Jiten Chatterji, Frank Zamora, Bobby J. King, Rita J. McKinley
USA
assigned to Halliburton Energy Services Inc.

Methods of cementing subterranean zones penetrated by a well bores are provided. In accordance with the methods, a cement composition is prepared comprised of a hydraulic cement, sufficient water to form a slurry and an effective amount of a liquid fluid loss control additive comprised of an emulsion having a copolymer of *N*,*N*-dimethylacrylamide and 2-acrylamido-2-methylpropane sulfonic acid or a salt thereof contained therein. The cement composition is placed in a subterranean zone and then allowed to set into a hard impermeable mass therein.

6268410

COLORED CONCRETE ROOFING TILES AND A METHOD FOR PRODUCING COLORED CONCRETE BODIES SUCH AS COLORED CONCRETE ROOFING TILES

Andreas Drechsler, Daniel Neupert, Silke Werner
Germany
assigned to Laferge Braas GmbH

A method for producing colored concrete bodies, particularly colored concrete roof tiles, whereby pigment is added to the unprocessed concrete mix. In order to provide the production of permanently colored concrete bodies with reasonably priced pigments which are stable in outdoor exposure and are resistant to light, particularly UV, alkalis and heat. A cement compatible aqueous polymer dispersion in which organic pigment is dispersed is added to the unprocessed concrete mix. Suitable cement compatible polymer dispersions are aqueous polymer dispersions based on styrene and/or pure acrylate. Phthalocyanine and quinacridone pigments are particularly suitable as organic pigments.