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6136089

APPARATUS AND METHOD FOR DEACTIVATING CARBON IN FLY ASH

Robert Hurt, Eric Suuberg, Yu-Ming Gao, Alicia Burnett,
USA
assigned to Brown University Research Foundation

An apparatus and method for improving the properties of carbon-containing fly ash through ozonation is described. The apparatus includes a chamber for containing the fly ash and an ozonator that generates an ozone-containing gas. The ozonator supplies the ozone-containing gas such that it enters the chamber with the fly ash and deactivates carbon within the fly ash. Afterwards, the fly ash will have decreased surfactant adsorptivity so that it can be effectively mixed with cement or whatever other materials may require fly ash with passivated carbon.

6136899

SBR FOR ASPHALT CEMENT MODIFICATION

Laurand Henry Lewandowski, Daniel Frederick Klemmensen,
USA
assigned to The Goodyear Tire and Rubber Company

It has been determined that a specific type of emulsion SBR can be used to modify asphalt cement to greatly enhance the resistance to shoving, rutting and low temperature cracking of asphalt concretes made therewith. It has further been determined that this emulsion SBR is compatible with virtually all types of asphalt and that modified asphalt cements made therewith have extremely high levels of force ductility, tenacity and toughness. The SBR used to modify asphalt cement in the practice of this invention is a blend of (i) a high molecular weight styrene–butadiene rubber having a weight average molecular weight of at least about 300,000 and (ii) a low molecular weight styrene–butadiene rubber having a weight average molecular weight of less than about 280,000; wherein the ratio of the high molecular weight styrene–butadiene rubber to the low molecular weight styrene–butadiene rubber is within the range of about 80:20 to about 25:75; and wherein the bound styrene content of the high molecular weight styrene–butadiene rubber differs from the bound styrene content of the low molecular weight styrene–butadiene rubber by at least 5 percentage points. These SBR compositions comprised repeat units which are derived from styrene and 1,3-butadiene, wherein the styrene–butadiene rubber composition has a number average molecular weight as determined by field flow fractionation which is within the range of about 50,000–150,000 and wherein the styrene–butadiene rubber has a light scattering to refractive index ratio which is within the range 1.8–3.9.

6136944

ADHESIVE OF EPOXY RESIN, AMINE-TERMINATED POLYAMIDE AND POLYAMINE

Steven Lee Stewart, Derek Scott Kincaid,
USA
assigned to Shell Oil Company

The present invention relates to a flexible industrial adhesive composition which effectively bonds thermoplastic polymer substrates and substrates having low stiffness such as fabric, rubbers and asphaltic materials, to materials selected from metals, fabrics, rubbers, engineered materials, and concrete, said flexible industrial adhesive composition comprising: (a) one or more epoxy resin(s) having an average of at least 1.5 epoxy groups per molecule; (b) a liquid amine terminated polyamide prepared by reacting at least one C.sub.18–50 dicarboxylic acid and an aminoalkylpiperazine in a ratio of moles of aminoalkylpiperazine to equivalents of carboxyl group in the acid of greater than 0.75:1; (c) one or more optional polyamine(s); and (d) one or more optional filler(s); wherein the tensile modulus of the flexible industrial adhesive composition is less than 500,000 psi and the tensile elongation of the flexible industrial adhesive composition is greater than 10%. The flexible industrial adhesive compositions of the present invention can be used in industrial assembly and automotive/aerospace/transportation (buses, railroads).

6138430

CEMENTITIOUS BUILDING PANEL WITH CUT BEAD

Bertrand Van Acoleyen, Toussaint Dolmans,
Belgium
assigned to Cemplank Inc.

A cementitious building product such as a siding clapboard is composed of about 30–50% cement, 40–60% sand and 5–15% fiber, by volume. A preferred mix has about 35% portland cement, 55% fine sand and 10% cellulose fiber by volume. As so composed the product can be worked after curing in a manner similar to wood. At least one elongated cut is formed after curing the product in the shape of an elongated board or plank, preferably by planing or routing the product along an edge to form a distinct bead that can be round, teardrop shaped, crowned or coved.

6140440

CEMENT DISPERSANTS

Mitsuo Kinoshita, Kazuhisa Okada,
Japan
assigned to Takemoto Yushi Kabushiki Kaisha

Cement dispersants which contain two specified kinds of water-soluble vinyl copolymers mixed at a specified ratio can produce cement compositions such as concrete with water/cement ratio of 20–40 wt% with a reduced slump loss and provide a high early strength.

6146133

PROCESS FOR THE RECYCLING OF RESIDUES FOR THE PRODUCTION OF PORTLAND CEMENT CLINKER

Helmut S. Erhard, Volker Schneider, Paul Korf,
Germany
assigned to Heidelberger Zement AG

The present invention concerns a process for the production of cement clinker in rotary kilns with substitution of primary raw materials and fuels by use of residual materials containing minerals and combustible parts with moisture contents of up to about 65% without predrying. The process makes possible a material and/or thermal utilization of residual materials in the case of saving of the clay and fuel sources and relief of dumping with simultaneous lowering of the emissions, above all NO_x, in the cement rotary kiln.

6150437

FLOW IMPROVING AGENTS FOR BINDER SUSPENSIONS CONTAINING CEMENT

Konrad Wutz, Alfred Kern, Josef Weichmann,
Germany
assigned to SKW Trostberg Aktiengesellschaft

Flow improving agents for binder suspensions containing cement are described, which consist of: (a) Graft polymers which have been prepared by radical grafting of a polyalkylene oxide of the general formula (I) with an ethylenically unsaturated mono-or dicarboxylic acid or the anhydride thereof, and then by derivatizing with a primary or secondary amine and/or alcohol, and also of (b) Casein. These flow improving agents have the advantage that the ability to flow is considerably improved in comparison, for example, with casein alone, and the improved ability to flow is preserved over a longer period of time.

6153005

FOAMED CONCRETE COMPOSITION AND PROCESS

Charles D. Welker, Martha A. Welker, Mark F. Welker, Mark A. Justman, Randy S. Hendricksen,
USA
assigned to Charles D. Welker

The present invention describes fluorochemical foam stabilizers used in combination with surfactants to yield foams that are exceptionally stable in cementitious media. The stabilized foams that incorporate these fluorochemical agents are useful as novel ultra-lightweight foam aggregates in concrete compositions of tailorable density, strength, and other properties. Methods of making concrete compositions that include such foam aggregates are also described.

6153006

CONCRETE DURABILITY ENHANCING ADMIXTURE

Zongjin Li, Chung Kong Chau, Faming Li, Baoguo Ma,
Hong Kong
assigned to The Hong Kong University of Science and Technology

An admixture for enhancing the durability of concrete to repeated freeze-thaw cycles is disclosed. The admixture comprises as an essential element, a natural polymer material derived from millet. The admixture further comprises smaller quantities of naphthenic sulfate salt, triethanolamine and formaldehyde. In addition the admixture can improve concrete's impermeability and chloride ion binding capability.

6153673

PHOSPHOMAGNESIUM CEMENT COMPOUND COMPRISING A POLYMER IN PARTICLE FORM

Dominique Lemos, Gilles Orange, Jean-Francois Colombet,
France
assigned to Rhodia Chimie

The invention discloses a new phosphomagnesium cement that can be obtained by contacting at least one phosphorus compound and at least one magnesium compound-based binder phase, with at least one polymer in water insoluble particle form, and water. The polymer can be selected among those derived from the polymerization of at least one ethylenically unsaturated monomer and at least one monomer selected among monomers with carboxylic function and acrylamide or methacrylamide. The phosphomagnesium cement can also comprise an aminoalkylsilane, preferably an aminoalkyl(alkoxysilane).