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CATHODIC PROTECTION SYSTEM FOR A STEEL-REINFORCED CONCRETE STRUCTURE

Bennett John E, Pohto Gerald R, Mitchell Thomas A
Painesville, OH, USA
assigned to Eltech Systems Corporation

An anode for cathodically protected steel-reinforced concrete is embedded in an ion-conductive overlay on the concrete structure. The anode comprises at least one sheet of highly expanded valve metal mesh having a pattern of voids defined by a network of valve metal strands connected at a multiplicity of nodes. This provides a redundancy of current-carrying paths through the mesh which ensures effective current distribution throughout the mesh even in the event of possible breakage of a number of individual strands. The surface of the valve metal mesh carries an electrochemically active coating. At least one current distribution member is welded to the valve metal mesh. The entire area of the structure to be protected, excluding non-protected openings for obstacles and the like, is covered by a single piece of the mesh, or several pieces in close proximity with one another.

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SULFATE AND ACID RESISTANT CONCRETE AND MORTAR

Liskowitz John, Wecharatana Meth, Jaturapitakkul Chai, Cerkanowicz Anthony E
Belle Mead, NJ, USA
assigned to New Jersey Institute of Technology

PCT No. PCT/US95/06336 Sec. 371 Date Nov. 20, 1996 Sec. 102(e) Date Nov. 20, 1996 PCT Filed May 19, 1995 PCT Pub. No. WO95/32162 PCT Pub. Date Nov. 30, 1995. The present invention relates to concrete, mortar and other hardenable mixtures comprising cement and fly ash for use in construction and other applications, which hardenable mixtures demonstrate significant levels of acid and sulfate resistance while maintaining acceptable compressive strength properties. The acid and sulfate hardenable mixtures of the invention containing fly ash comprise cementitious materials and a fine aggregate. The cementitous materials may comprise fly ash as well as cement. The fine aggregate may comprise fly ash as well as sand. The total amount of fly ash in the hardenable mixture ranges from about 60% to about 120% of the total amount of cement, by weight, whether the fly ash is included as a cementitious material, fine aggregate, or an additive, or any combination of the foregoing. In specific examples, mortar containing 50% fly ash and 50% cement in cementitious materials demonstrated superior properties of corrosion resistance.

5776244

ULTRAFINE CEMENTITIOUS GROUT

Ahrens Ernst
Albuquerque, NM, USA
assigned to Sandia Corporation

An ultrafine cementitious grout having a particle size 90% of which are less than 6 m in diameter and an average size of about 2.5 m or less, and preferably 90% of which are less than 5 m in diameter and an average size of about 2 m or less containing Portland cement, pumice as a pozzolanic material and superplasticizer in the amounts of about 40 to 50 wt% Portland cement; from about 50 to 60 wt% pumice containing at least 60% amorphous silicon dioxide; and from 0.1 to 1.5 wt% superplasticizer. The grout is mixed with water in the W/CM ratio of about 0.4–0.6/1. The grout has very high strength and very low permeability with good workability. The ultrafine particle sizes allow for sealing of microfractures below 10 m in width.

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CEMENT COMPOSITION

Berke Neal Steven, Dallaire Michael Pau, Kerkar Awdhoot Vasan
Chelmsford, MA, USA
assigned to W R Grace & Co-Conn

A cement admixture composed of a mixture of lower alkyl ether oxyalkylene adducts with a sulfonated organocyclic material to provide cement compositions of mortar and concrete which inhibit drying shrinkage while attaining very high slump and/or increased compressive strength.