

**5427819**

**CORROSION INHIBITING REPAIR AND  
REHABILITATION TREATMENT PROCESS  
FOR REINFORCED CONCRETE  
STRUCTURES**

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A repair and rehabilitation treatment process for reinforced concrete structures involves the removal of concrete from above rebar or other metal reinforcement material in the concrete structure. After removal of concrete, the metal reinforcement materials are saturated with corrosion inhibiting agents. Saturation is best achieved by multiple spray applications of the corrosion inhibitor. The cavity in the concrete structure with the treated rebar or other metal reinforcement materials is then backfilled and/or overlaid with repair concrete. Preferably, the repair concrete includes corrosion inhibitors which will diffuse to the rebar over time or is a low permeability concrete that reduces the rate of diffusion of chloride corrosion causing agents to the rebar. The repair and rehabilitation process significantly increases the concrete structure's service life.

**5431795**

**CATHODIC PROTECTION SYSTEM AND A  
COATING AND COATING COMPOSITION  
THEREFOR**

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Cathodic protection system for the cathodic protection of a reinforced concrete structure, which system comprises a concrete structure containing steel reinforcement bars and an electrically conductive coating bonded to an external surface and in electrical contact with the structure, and wherein said electrically conductive coating is a non-cementitious coating comprising a matrix of an organic polymer

containing electrical conductivity-providing particles of carbon coated with a conductive metal of a type possessing a natural passive oxide film which is itself electrically conductive, and an alkaline buffer material or combination of materials for inhibiting or preventing the build up of acidity in the coating when the cathodic protection system is in operation.

**5432212**

**DISPERSANT COMPOSITION FOR  
CEMENT HAVING EXCELLENT PROPERTY  
IN INHIBITION OF SLUMP-LOSS**

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A cement admixture which when added to a cement composition, such as cement mortar or concrete inhibits slump-loss of the cement composition and improve its workability and applicability. The admixture is composed of copolymers from an alkenyl ether, a polyalkenyl ether and maleic anhydride.

**5447564**

**CONDUCTIVE CEMENT-BASED  
COMPOSITIONS**

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Conductive cement-based compositions exhibiting both good electrical conductivity and mechanical strength have been obtained by ensuring proper dispersion of conductive phase within the composition. The content of the ingredients depends on the preparation method, for instance conventional mixing or slurry infiltration, and on the type of the composition, i.e. conductive paste, mortar or concrete. The broad content ranges of the conductive composition are: a cement binder, a conductive phase consisting of one or more of the following: conductive fibers in the amount from 0 to 15% by volume of the composition; conductive particles in the amount from

0 to 80% by volume of the composition; water, at the weight ratio relative to cement binder from 0.2 to 0.75, fine aggregates at the weight ratio relative to cement binder from 0.0 to 2.0, and coarse aggregates at the weight ratio relative to cement binder from 0.0 to 2.0, conventional additives or admixtures, and optionally a dispersant. Exemplary compositions obtained according to the invention have a 28-day d.c. resistivity of 0.46-43 Ohm-cm and 28-day compressive strength of 35-71 Mpa.

**5453123**

**THIXOTROPING AND  
SET-ACCELERATING ADDITIVE FOR  
MIXTURES CONTAINING A HYDRAULIC  
BINDER, PROCESS USING THE ADDITIVE,  
APPARATUS FOR PREPARING THE  
MIXTURES CONTAINING A HYDRAULIC  
BINDER AS WELL AS THE ADDITIVE**

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assigned to Sika AG vorm Kaspar Winkler & Co

There is described a thixotroping and set accelerating additive for mixtures which contain as component a hydraulic binder and/or a latent-hydraulic binder and furthermore water and optionally also an aggregate and/or other additives. The inventive thixotroping and set accelerating additive consists of one or more esters of the carbonic acid or said additive is a mixture which has a pH-value of not more than 8.0, preferably not more than 7.5 and contains as component at least one of said carbonic acid esters. Optionally the inventive additives can comprise further components which frequently are added to materials containing a hydraulic binder in order to improve the workability and/or the properties of the final building material, like concrete plasticizers, concrete super-plasticizers, set retarding agents, set accelerating agents, air entraining agents and optionally further thixotroping agents and mixtures of two or more such additives. The present invention furthermore concerns a mixture containing a hydraulic binder and the inventive additive and furthermore a process for preparing such a mixture

and an apparatus for performing the process.

**5456751**

**PARTICULATE RUBBER INCLUDED  
CONCRETE COMPOSITIONS**

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PA, UNITED STATES assigned to Trustees of the  
University of Pennsylvania

Concrete compositions are provided which contain particulate rubber, preferably recycled rubber from such sources as automobile tires, in amounts between about 0.05 and about 20 percent by weight of the concrete composition. The concrete compositions further contain portland cement, water, and an aggregate material. Additional materials such as superplasticizers and fly ash can also be admixed with the concrete compositions.

**5456752**

**GRADED FIBER DESIGN AND CONCRETE  
REINFORCED THEREWITH**

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Graded fiber additives of the present invention provide a mixture a fibers having a plurality of deniers, cross-sections and aspect ratios defining a plurality of different types wherein each type present in the mixture differs from every other type by at least one of denier, cross-section and aspect ratio, the plurality of types being designed and selected to provide optimum graded fiber distribution to accommodate the mortar factions common to proportioned concrete containing graded aggregate, and thereby to inhibit the initiation of cracking. Concrete and like materials having improved crack resistance comprise concrete and from about 0.025 to one percent by volume of fiber mixture providing a plurality of deniers, cross-sections and aspect ratios. The present invention further provides a methods for