

Creating Material Change



CeramycGuard™

Ceramic Surface Treatment



Innovation underpins everything we do
www.haydale.com  HaydaleGraphene

CeramycGuard™

Ceramic surface treatment (CST) utilising Haydale's propriety Silicon Carbide Microfibre along with Alumina and Zirconia Silicates to renew and preserve concrete surfaces.

This dense ceramic polymer wraps around and chemically bonds to all elements in the concrete, shielding the surface from the environment. CeramycGuard™ is not affected by wet/dry or freeze/thaw cycles, and will not peel, flake, chalk, or delaminate.

CeramycGuard™ was developed by the Rutgers University and is manufactured in the USA.

CeramycGuard™ protects concrete assets, including:

- Bridges (decks, beams, piers/abutments)
- Cast concrete products (slabs, pipes)
- Cinderblock walls
- Commercial & Industrial floors
- Concrete Roadways, Runways, Pathways
- Dams
- Food Storage & Processing
- Greenhouses (walls and floors)
- Loading docks
- Parking garages (deck and walls)
- Retaining and Sound Barrier Walls
- Seawalls, Wharfs and Quays
- Storm drains
- Tunnels
- Wastewater Treatment
- Water Treatment

CeramycGuard™ is an Asset Preservation Technology that protects concrete in the following ways:

Penetrating Chemical Adhesion:

CeramycGuard™ is designed to chemically bond to the concrete, bridge and fill the pores and micro-cracks in concrete, coat the surface, and bind all elements together under a protective ceramic layer.

Eliminates surface voids:

CeramycGuard™ reduces surface porosity dramatically to prevent road salts and other destructive elements from entering the concrete while still remaining breathable, protecting the embedded steel reinforcement. The ability to limit liquid and particle intrusion while allowing water vapor to dissipate prevents spalling and freeze-thaw damage caused when water becomes trapped inside the concrete.

Anti-Abrasion:

CeramycGuard™ offers excellent abrasion resistance and will not peel or tear. It includes advanced ceramics like Silica Carbide that create an extremely durable surface that resists weighted and grating abrasion.

Self-Cleaning:

CeramycGuard™ is a true "biologically impervious" surface which has metal oxidative and photocatalytic self-cleaning properties which are not consumed with use.

Extreme Environmental Conditions:

CeramycGuard™ is immune to UV and heat, and maintains a permanent buffer against airborne contaminants like carbonic acid, sulfuric acid, etc. The dense, oxidative, surface of CeramycGuard™ creates a "biologically impervious" barrier to microbes and their food source, preventing them from colonising the concrete surface.

Compatibiliser:

CeramycGuard™ works as an adhesion promoter for the surface of concrete creating superior bonding for repair mortars and epoxies/paints, eliminating "cold joints" and extending their lifecycles. CeramycGuard™ can also be applied directly to exposed rebar to create a protective cover.

Competition:

Epoxies and paints are commonly used over concrete surfaces, but they only "stick" to the surface and quickly degrade and peel-off, due to their weakness when exposed to UV sunlight and inability to breathe out trapped water vapour. Trapped moisture in the concrete allows for carbonation and biological growth, leading to cracking, spalling, rebar rusting, and eventual concrete failure. CeramycGuard™ eliminates all of these problems. It can be repaired in-place without expensive pre-treatments.

Vitrium™

Haydale's CeramycGuard™ with Vitrium™ create a complete moisture barrier, preventing water/waterborne chemical pollutants and other corrosive elements from entering concrete. This sealer prevents staining and does not allow for paint, marker, or oil to permanently stick to the surface, allowing for easy cleaning.

Vitrium™ uses an EPA-exempt green solvent that offers superior performance while maintaining ease of application properties and possesses the following properties:

- Zero-Porosity
- Will Not Chalk, Peel, or Dis-bond
- UV Resistant
- Graffiti-Barrier
- Adhesion Promoter for Topcoats

QuartzSeal™

Haydale's CeramycGuard™ with QuartzSeal™ is a penetrating chemically bonded, breathable, inorganic sealant that has been engineered to prevent the microbial colonisation of an asset's surface. With near-zero porosity, QuartzSeal™ inhibits water/waterborne chemical pollutants and other corrosive elements from entering concrete whilst remaining breathable. The sealed surface prevents the accumulation of dust, dirt, and is also stain resistant.

Ceramic System Pore Blocker™

Haydale's Ceramic System Pore Blocker™ (CSPB) uses colloidal silica technology to provide an optimal surface for application of Haydale's Ceramic Surface Treatments. One of the benefits of CSPB is that on existing concrete it will either purge or encapsulate contaminants in the concrete while providing more calcium silicate hydrate (C-SH) for CeramycGuard™ bonding.

Colloidal Silica technology penetrates deeply into the accessible capillary system, reacting with the available free alkali, primarily forming C-SH. The treated concrete performs comparably to moisture cured concrete with reduced permeability and a denser surface.



Haydale is a global technology solutions company passionate about creating the next generation of advanced composite materials. We bring together cutting-edge technology with engineering know-how to enhance the performance of products and materials thus delivering business value for our customers. We:

- use tailored advanced materials to enhance the quality and performance of our customers' products
- develop nanomaterial enhanced resins for the prepreg carbon fibre market to deliver enhanced electrical, thermal or mechanical performance to the aerospace, automotive and other hi-tech industries
- offer nanomaterial enhanced polymers for additive manufacturing that allow better products to be made faster
- formulate proprietary nanomaterial-based inks and coatings for the print and sensor markets, including regulatory approved ink for biomedical sensors
- manufacture unique, proprietary silicon carbide fibres and whiskers that strengthen ceramics and enable highly scratch and wear resistant coatings for applications as diverse as cookware coatings, cutting tools that make jet engine turbine blades and corrosion protection for oil and gas pipelines

We are at the start of the fourth industrial revolution and we are helping companies seize new opportunities.



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