

CeramycGuard™



Preserving the
Future of Concrete



Creating Material Change
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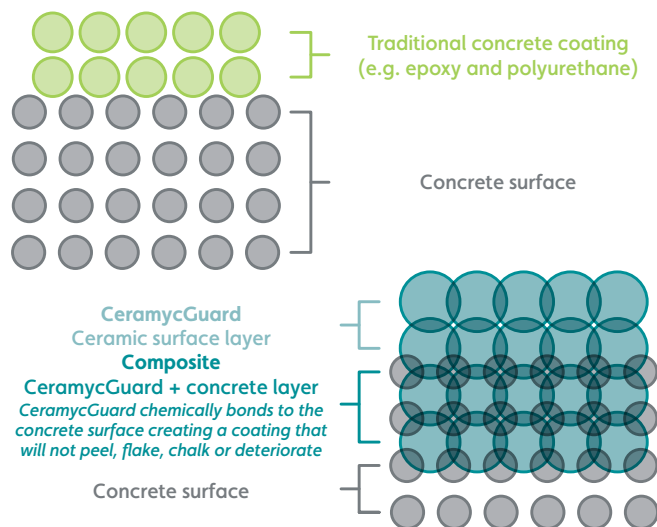
The Concrete Challenge

Concrete is the most widely used material in the world in terms of volume and is used in construction twice as much as any other building material. However, its abundant use does present its own problems. While it might be incredibly resistant to water and fire, it is porous and chemically unstable. For many applications to realise their full potential, concrete needs a coating to reduce porosity and protect it from chemical, microbial and water attack.

It all starts with the base coat

Epoxies and paints are commonly used to protect concrete surfaces, but their problem is that they only 'stick' to the surface and quickly degrade and peel-off.

CeramycGuard is the first ceramic-polymer coating that chemically bonds to the surface and protects against delamination and peeling. The chemically formed composite layer gives the concrete a durable and non-permeable surface and prevents erosion by extracting the low mineral content of water. The reduced porosity can greatly enhance the service life of concrete assets, potentially by up to 30 years in harsh, chemical environments.



Award Winning

CeramycGuard achieved the prestigious title of **'Materials Application of the Year'** at the 2022 British Engineering Excellence Awards (BEEAs).



Developed and manufactured by advanced materials company Zirconia using Haydale's proprietary Silicon Carbide Microfibre, along with nano-Alumina and Zirconia Silicates, the suite of CeramycGuard concrete system products offer a solution to the problems often encountered with concrete infrastructure, repair and renovation that cannot be accomplished by other means.

Superior Performance

CeramycGuard is a concrete surface coating that provides chemical and microbiological protection for concrete assets. Exclusively distributed by Haydale in the UK, the coating has been designed so that it fills the pores and microcracks, coats the surface, and binds all the concrete elements together under a single protective ceramic layer.

Applications:

- Commercial & Industrial Flooring
- Food Storage & Processing
- Car Parks
- Precast Products
- Bridges
- Seawalls
- Storm Drains
- Tanks
- Tunnels
- Wastewater Treatment
- Water Treatment

Minimal surface preparation is required prior to application. The product is easy to mix and can be applied by roller or spray equipment for larger coverage areas. The surface can be cured at 5 or 12 degrees, with the concrete asset being back in service between 24 hours and 7 days, dependent on the size of the area being treated. This ensures there is minimal down time and disruption to operations.

Carbon Reduction

The repair rather than replace approach has the potential to significantly reduce CO₂ emissions. Cement, the key ingredient in concrete accounts for about 8% of the world's CO₂ emissions, according to think tank Chatham House.

CeramycGuard is not affected by wet/dry or freeze/thaw cycles, and will not peel, flake, chalk, or delaminate. Its enhanced properties mean the service life of concrete assets can be significantly increased. Therefore, reducing the frequency by which new concrete is needed. Less concrete means lower CO₂ emissions.

As a surface treatment, CeramycGuard produces 2.2kg of CO₂ per litre. and is potentially more environmentally friendly compared to the epoxies and paints currently used.

The surface treatment is currently WRAS approved BS 6920 and the target for 2022 is to get full DWI approval.

Field Applications

Structural Concrete

The best way to protect structural concrete is to prevent water ingress that causes carbonation and allows for organic growth and biological acids leading to subsequent deterioration.

CeremycGuard was used on the Morganza Spillway Bridge structural repair and rehabilitation of the Pier Cap.

CeremycGuard was applied to existing structural concrete and repair mortar on the Pier Cap, with the surface evaluated and photographed after five years to assess the long-term performance of the surface treatment. There were no signs of spalling, cracking, or other deterioration for either the repair mortar or structural concrete from carbonation, moss growth, or extreme weather.



Sealing the Deal

QuartzSeal is a penetrating, chemically bonded, inorganic sealant that when applied over CeremycGuard further inhibits water and chemical pollutants and helps to seal out dust, dirt and protects against stains. It also offers a biological impervious, super clean surface.

Applications:

- Car Parks / Garages (walls)
- Precast Products (slabs, pipes)
- Bridges
- Wastewater / Water Treatment
- Walls
- Floors

Floor Finishing

A food processing company was having issues with decaying concrete and failing floor coatings in their existing plants.

When Johnson Foods was building their new facility, they were looking for a flooring solution that would stand up to the harsh environment that requires regular concrete replacement and repair in their existing plants. It also needed to be easy to clean and non-slip.



The solution was CeremycGuard and QuartzSeal. Applied to the floors it eliminated all permeability and sealed the surface to prevent the ingress of food and water, thereby eliminating the root cause of bacterial growth.

The surface treatment provides a biologically impervious layer, preventing bacteria, viruses, fungi, and other microbial life from growing. In addition, the surface is now non-permeable and easy to clean with less harsh 'greener' cleaners.

Johnson Foods is now looking to apply the ceramic surface treatment for the repair and treatment of other parts of their existing plants.

Top Coat

The CeremycGuard base coat can be further enhanced for other applications such as flooring using CompositCoat.

The floor finish system replaces chemically unstable concrete with an ultra-stable ceramic-urethane composite to protect it from chemical and physical erosion. It also makes flooring biologically impervious eliminating microbial habitat and continuously prevents microbial invasion and growth.

Applications:

- Commercial flooring such as loading docks, distribution centres, car parks and parking ramps.
- Food production, manufacturing facilities and storage rooms.
- Sterile rooms and laboratories.
- Harsh wastewater treatment areas.

Performance Flooring

Fruit drink manufacturer, Rays Lemonade had issues with their epoxy flooring failing and being subject to erosion and debonding turn creating problems with microbial growth. It meant having to replace the floor after just six months.



A year after installing the CompositCoat floor finish, the floor continues to perform perfectly. There are no signs of it peeling or failing like the epoxy flooring and the ceramic surface treatment has been specified for two new plants.

If you are interested in preserving concrete surfaces then the suite of high-performance coatings available from Haydale could provide a cleaner, greener solution.

Get in touch with us to find out more.

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