



HEGSEL®

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NEWSLETTER

HEGSEL® FU 633

July 2022

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Corrosion Resistant Furan Synthetic Mortar

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Brief On Surface Corrosion

Surfaces may be subjected to degradation in different forms due to the corrosion in various environments such as exposures to destructive aqueous mediums, deteriorating atmospheric factors, microbiologically induced processes, high temperature, etc.

Concrete is one of the most common materials used to build reliable structures, and to cover surfaces in construction applications including walls and floorings in multiple industrial sectors such as transitional structures, water resource facilities, reservoirs, ponds, containment areas, etc. through chemical, petrochemical, oil and gas facilities, water treatment plants (WTP), powerplants, transportation network, and other industries.

Corrosion in concrete may occur as a result of permeability, surface cracks, corrosive gas penetration, microbiological, exposure to harsh chemicals such as hydrogen sulfide, sunlight, etc. The corrosion will, in turn, reduce the strength of concrete structures and result in failure.

Likewise, metal substrates are also exposed to several types of destructive phenomena, most commonly chemical and atmospheric corrosion, due to the presence of oxygen and moisture almost everywhere, exacerbated by other harsh exposures including acidic and alkaline environments through multiple industrial applications.

Therefore, different approaches have been developed to prevent corrosion of surfaces whether metal or concrete, such as adjustment of service conditions, modifications in design, improvements on concrete mixtures, better material selection, regular cleaning, etc.; however, surface protection with coatings and linings is the most common method of creating non-permeable and durable corrosion resistant barrier between substrates and corrosive environments, serving the protective purposes.



Corrosion Resistant Mortars

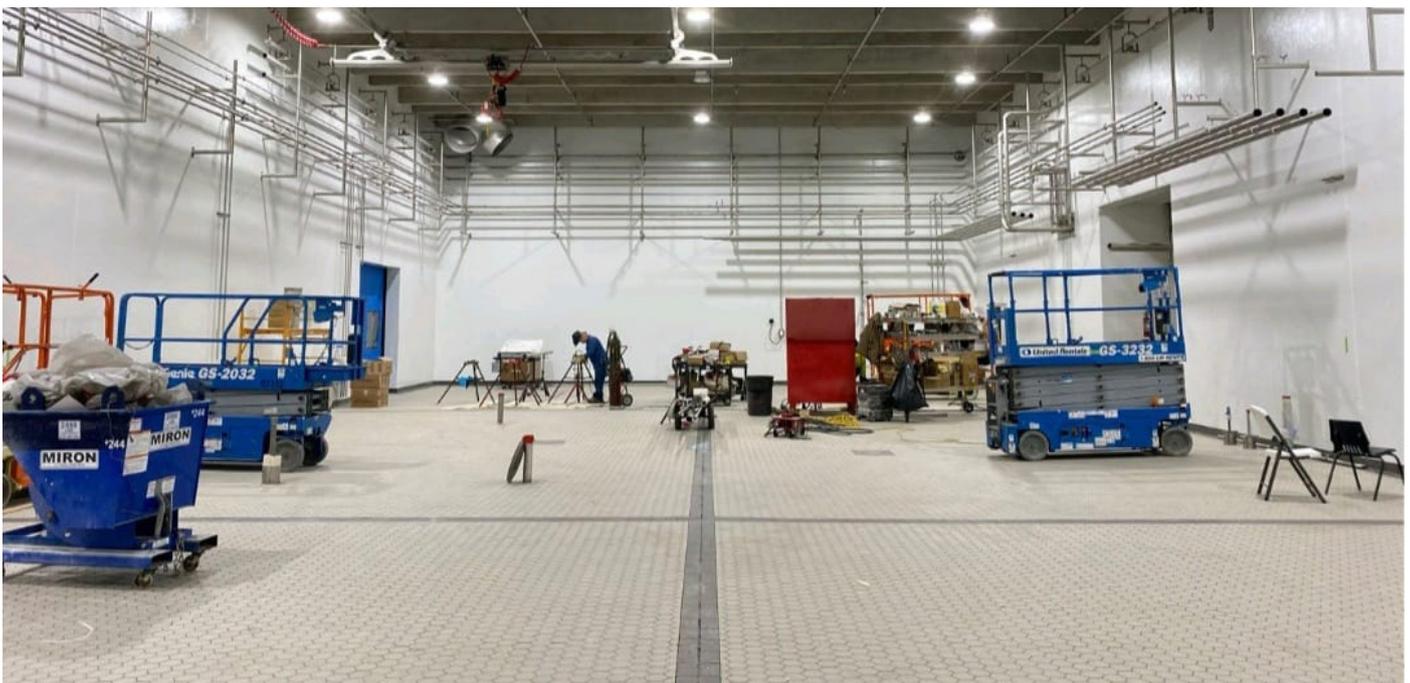
Material selection is a key step in improving the efficiency of industrial components. Meanwhile, sustainability is another critical issue to be considered to achieve full utilization of industrial facilities. In this regard, corrosion protection linings greatly contribute to tailoring surfaces for more durability and optimized functionality, in order to maintain operating features in a large spectrum of processes and equipment, reducing costs at industrial scales.

Anti-acid tile linings have been long used where chemical resistance and enhanced mechanical properties are essential requirements to durably protect assets against destructive effects of corrosion/erosion. In this regard, the selection of bedding and jointing mortar is the inseparable part of constructing the resistant structure of anti-corrosion lining systems, since tile lining without a proper anti-acid mortar is extremely vulnerable to failure.

Across different industries including chemical, petrochemical, oil & gas, wastewater/water treatment plants, power plants, metal smelting, steel, food and dairy, etc., there are main applications of anti-corrosion mortars for protection and/or rehabilitation purposes, such as:

- ✓ Surface areas in contact with acids, alkalis, corrosive solvents and their spills
- ✓ Surfaces exposed to clean-in-place (CIP) systems
- ✓ Tanks, canals, pits, floors, sumps, secondary containments, Neutralization pools
- ✓ Reservoirs, acidic and alkaline storages, chemical storage warehouses, waste ponds

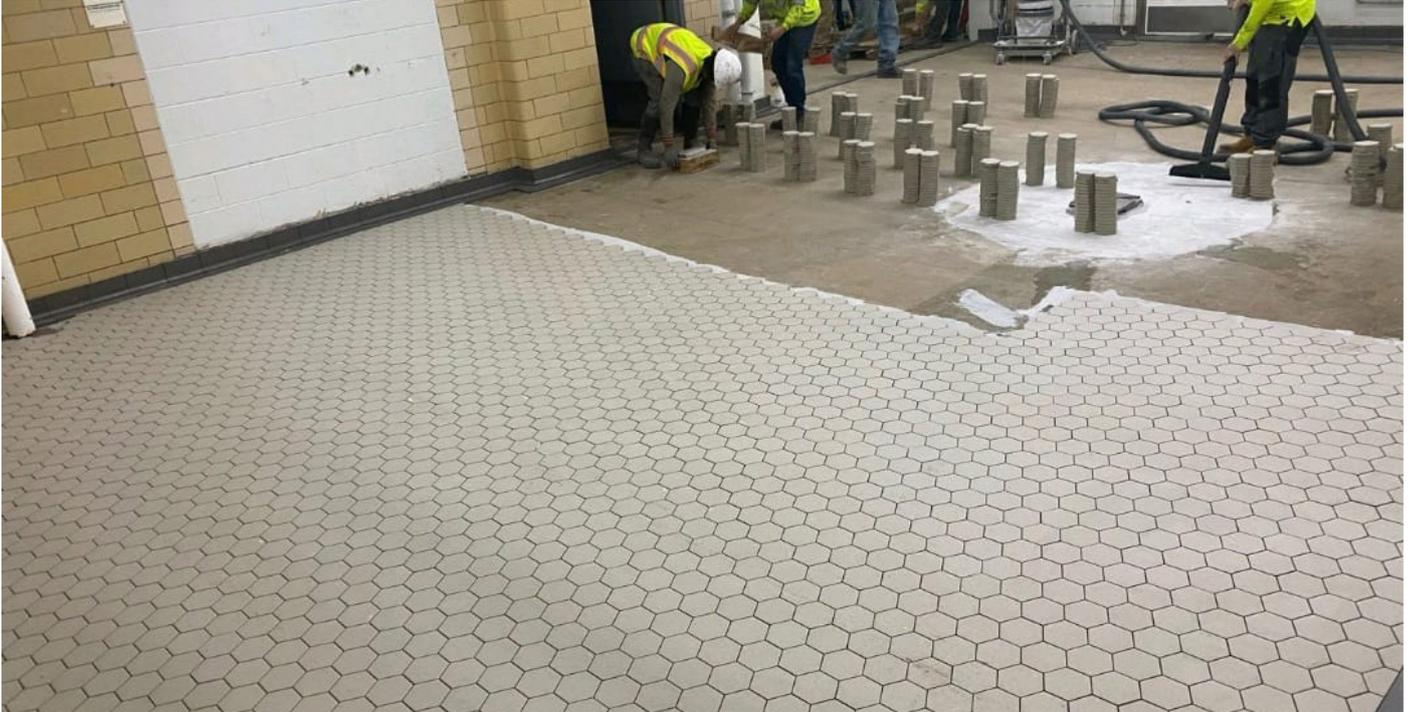
Withstanding the corrosive effects of acids and alkalis, mortars are primarily used for laying and grouting ceramics, acid-proof tiles, carbon bricks and moldings to produce chemically, thermally and mechanically resistant coating and protective lining in acid and process industries.



Anticorrosive Furan Resin Mortar

A Multifunctional Product Required by Industries

► Flooring Protection, Jointing, Bonding and Sealing Applications



Employing different binders in their chemical composition, mortars come in a variety of bases such as Furan, Potassium-Silicate, Phenolic, Novolac Vinyl Ester and Epoxy, each covering a range of requirements for mechanical and chemical resistance. Depending on the precautionary measures in each set of service conditions, the specific composition of the mortar could be determined to achieve effective corrosion protection.

Here, Furan resin mortars possess a great degree of resistance to chemicals such as strong acids, bases, oils and solvents. Demonstrating durable resistance features against attack by all prevalent acidic and alkaline environments, Furan mortars are widely used with anti-acid tiles/bricks as a protective topping on surfaces/floorings, more cost-effective than other protective linings of comparable durability.

Furan resin mortars are broadly used as bedding and jointing material in acid resistant brick/tile lining works, applicable for corrosion protection of tanks, floors, drains, vessels, neutralization pits, etc.

Combining expertise with multi-technology approach, **HEGSEL FU 633** has been innovatively produced in two-component format, a Furan solution and a catalyzed mineral filler powder for corrosion protection against a wide range of materials including strong acids, bases, oils and solvents at operating temperatures exceeding 188°C.

HEGGEL® FU 633

► Two-Component Furan Resin Mortar

When it comes to corrosion protective linings, durability is of paramount importance, so that the mechanical and chemical resistance requirements are met. Defects including blistering, delamination, cracks, etc. may gradually spread out through inappropriate lining systems due to the relatively high permeation, and this may lead to rapid devastation of industrial infrastructures.

Covering a broad range of mechanical properties and chemical resistance, **HEGGEL FU 633** is an impervious product, ideal for numerous applications including being primarily installed as a bedding and jointing mortar for fixing acid-proof bricks and tiles, fixturing of the linings in holding vessels, etc.

With excellent bonding to the metal and concrete surfaces, **HEGGEL FU 633** mortar is a multifunctional solution responsive to a vast extent of fluids in various applications, in particular for general tiling/masonry work and for trenches, pits and storage areas where strong acidic/alkali materials are present.

A fast-setting mortar suitable for installation process in tropical climates (20 - 40°C), **HEGGEL FU 633** is well characterized by its impermeable structure to offer impressive resistance against arrays of acids, alkalis, salts, solvents, grease, hydrocarbons, detergents, etc., so that the life cycle of industrial assets in contact with destructive mediums are enhanced and the maintenance expenditures are reduced to a great extent.

In addition to its excellent chemical resistance, **HEGGEL FU 633** can be reinforced with glass mats for better mechanical strength, specifically for buildup purposes through in-site tank linings.



► Application Areas

- ✓ General tiling/masonry work
- ✓ Surface/flooring protection in: chemical industry, wastewater treatment, food & beverage industry, powerplants, process industries, etc.
- ✓ Flooring in plating halls in auto parts manufacturing plants
- ✓ Flooring in pickling lines of steel industry
- ✓ Trenches, pits, canals
- ✓ Neutralization tanks
- ✓ Storage areas
- ✓ Leveling of unlevel surfaces
- ✓ In-site tank lining
- ✓ Holding vessels
- ✓ Containment dikes/sump areas
- ✓ Reservoirs



► Technical Data

Description	Unit	Value
Density	kg/m ³	1985
Specific volume	m ³ /ton	0.5
Tensile strength	kg/cm ²	84
Compressive strength	kg/cm ²	387
Flexural strength	kg/cm ²	178
Bond strength (wire cut bricks)	kg/cm ³	28
Coefficient of expansion	10 ⁻⁶ °C	14.4
Water absorption	%	0.2
Maximum operating temperature	°C	188



HEGGEL GmbH is now honored to be a member of the integrated community of European Federation of Corrosion (EFC)

The **EFC** is described as a federation of organizations with interests in corrosion, based in Europe and beyond.

Founded in 1955, its aim is to advance the science of corrosion and protection of materials by promoting cooperation in Europe and collaboration internationally.

The technical aspects of **EFC** work through working parties and chair people concerned with various aspects of corrosion related issues, whether it is corrosion science or methods of corrosion prevention.

Being a member of this scientific organization, **HEGGEL GmbH** best elaborates its knowledge-based approach -empowered by expertise- and rich experience to eligibly take part in the advancements that are being made in science. As a leading manufacturer of industrial protective coating and lining systems, **HEGGEL GmbH** perfectly fulfills a broad range of requirements with innovative solutions to proceed with effective collaborations concordant with **EFC** community towards corrosion prevention.

HEGGEL GmbH looks forward to being part of the activities, publications and events of this prestigious federation and the relevant working parties.



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