



You Build, We Protect!

NEWSLETTER

HEGGEL® VE 640

November 2022



INSIDE THIS ISSUE:

Innovatively Designed
Novolac Vinyl Ester
Protective Overlay

- ◆ Nitric Acid at the Industrial Level
- ◆ Emphasis on Floor Protection
- ◆ A Customized Advanced Solution:
Mineral Filled Synthetic Mortar
- ◆ A Multi-Exposed Protective System

Nitric Acid at the Industrial Level

Extensively used in chemical plants, Nitric acid (HNO_3) with high reactive features is an essential agent in a variety of industrial applications. It is primarily used in manufacturing of fertilizers, nitrate salts, dyes, cleansers, explosives and many other products; and as raw material in polymer synthesis, or a precursor to organic compounds. Nitric acid also plays a major role in metallurgy, aerospace, coating, dairy, pharmaceutical and medical industries.

Highly corrosive to many metallic and non-metallic surfaces, Nitric acid is a strong oxidizing chemical, causing localized corrosion defects. Nitric acid attacks are by far more deteriorating in high concentrations and/or high temperature exposures, resulting in severe pitting.

Substrates made of carbon or alloy steel are intensely damaged by nitric acid, even at low concentrations. Corrosion attacks of this mineral acid are more destructive on concrete surfaces even in brief exposures, since the soluble corrosion products are leached, and corroded layers easily shrink. Meanwhile, accumulation of concrete corroded layers can lead to peeling or visible cracks on surfaces, creating paths for chemicals to easily penetrate the underlayers.

Detrimental effects of nitric acid exposures on surfaces of facilities may gradually extend to erosion of the substrates, imposing a great deal of risk to the entire structural integrity; and as a consequence, combined costs of replacements or/and rehabilitation of industrial components would be inevitable.

Moreover, the release of nitric acid into the environment may raise critical issues, including fast-spreading pollution of soil, surface water and groundwater sources.



Emphasis on Floor Protection



Heavy industrial processes are constantly dealing with a wide range of acids and alkalis in varying concentrations. The contact media in service conditions could be intensely harsh and likely to damage surfaces of multiple facilities including tanks, vessels, floors, walls, dike areas of exposures, etc.

Chemicals with destructive corrosion effects, whether used in production plants as a feed material or produced as a by- or end-product, would eventually come into contact with floors, either incidentally or through a controlled release. On the other hand, increased mechanical stresses, abrasion, impact, etc. are among threatening factors involved in the failure of industrial infrastructures over time.

Cracks and voids through the porous microstructure of common concrete floors easily absorb harsh chemicals, corroding the surfaces at industrial-scale exposures. Extent of damages is a function of variable temperature, term and duration of exposure, concentration of corrosive materials and mechanical loads. However, discolorations, pitting, broken parts, bubbling, and embrittlement of concrete are of visible consequences of corrosive interactions.

Having reviewed the causes and effects of corrosion on flooring and cement-based surfaces briefly clarifies the paramount importance of a comprehensive floor protection against destructive chemical and mechanical elements to maintain the consistency of processing operations, and impede failure in critical industrial assets.

Advanced Protective Mortar

► A Customized Solution

There are numerous corrosive chemicals widely utilized in processing sectors of various industries. Industrial settings in direct contact with such media require adequate protection against chemically harsh environments. This sensitive situation becomes more aggravated when specific mechanical and thermal requirements are essential to be met simultaneously.

Tile lining and brickwork in combination with synthetic resin-based mortars are reliable methods for a lasting protection of surfaces (mainly concrete floors) against aggressive media, withstanding heavy loads and extreme stresses at various temperature distribution.

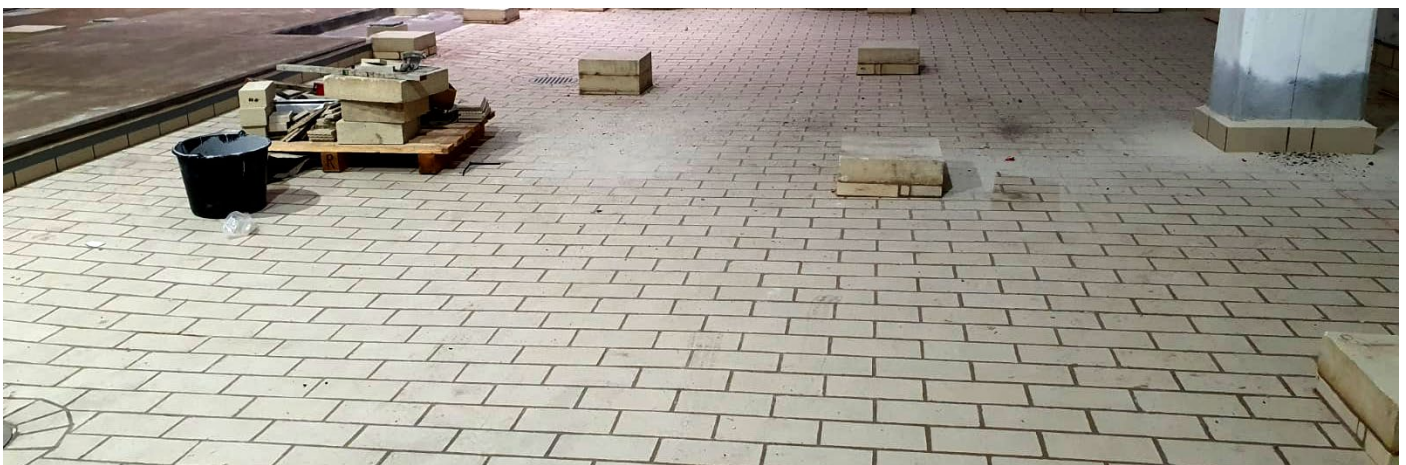
Depending on process conditions, sealing mortars with high chemical, mechanical and thermal resistance properties are exclusively synthesized on various resin bases to construct effective barriers, preventing corrosives from passing through the substrate, while providing the required mechanical and thermal resistance features.

With a proper mortar installed as a high performance, protective building material, structural lifespan would be dramatically increased and thereby, industrial productivity highly secured; for the reason that forced downtimes of replacement/ rehabilitation procedures would be minimized considerably.

With growing consumption potential and expanding demands for Nitric Acid due to cutting-edge industrial developments, protecting facilities mainly from the barrage of its chemical attacks is a matter of concern.

Vinyl ester-based mortars provide resistance to the majority of harsh acids such as nitric acid, and numerous alkalis and salts. However, when it comes to the exacerbated conditions, such as increased concentrations of corrosive flows and/or higher temperatures where further mechanical strength is required, conventional vinyl ester could not be a durable option to meet technical requirements, specifically in terms of chemical resistance.

Here, **HEGGEL VE 640** has been formulated with remarkable features for a highly efficient performance in various scopes of applications to fulfill a broad range of technical requirements.



► Two-Component Novolac Vinyl Ester Resin Mortar



Advanced Solution for a Multi-Exposed Protective System

HEGGEL VE 640, a two-component system based on a Novolac vinyl ester resin with mineral fillers, is a high-quality solution ideal in many applications on both concrete and metal substrates through industrial process plants. Demonstrating an excellent chemical resistance, especially against oxidizing media such as concentrated nitric acid, **HEGGEL VE 640** has been characterized by an impermeable structure to fully resist multiple destructive effects of acids, alkalis, solvents and hydrocarbons.

As a cold curing synthetic resin mortar, **HEGGEL VE 640** is suitable for bedding and jointing of tiles, bricks and fittings to protect substrates against excessive chemical exposures, as well as mechanical and thermal stresses.

Offering a strong protection at high temperatures, **HEGGEL VE 640** also covers a notable range of mechanical resistance in versatile applications. With great stability, **HEGGEL VE 640** has a long service life and exhibits excellent durability when aggressive conditions are being concurrently imposed.

Characteristics

- Fast curing
- Superior chemical resistance against aggressive chemicals, oxidizing media including concentrated nitric acid, as well as many organic compounds
- Excellent mechanical strength values
- Easy application to avoid lengthy shutdowns
- High thermal resistance

Application Areas

- Tiling and brick linings of components/masonry work
- Trenches, pits, floors, walls, plinths, tanks and storage areas
- Flooring of industrial sheds for CIP procedure
- Waste water and process water treatment plants
- Pickling lines
- Industrial and waste processing areas
- Chemical processing plants



Technical Features

Technical Data	Standard	Unit	Value
Resistance to Ground	EN ISO 1081	Ω	$> 10^9$
Density (Mixture)	EN ISO 2811 (ASTM D1475)	g/cm ³	1.8
Compressive Strength	EN ISO 604	N/mm ²	80
Coefficient of Thermal Expansion	-	1/K	35×10^{-6}
Max. Operating Temperature Liquids	-	°C	+150