



You Build, We Protect!

NEWSLETTER

HEGGEL® Mortars

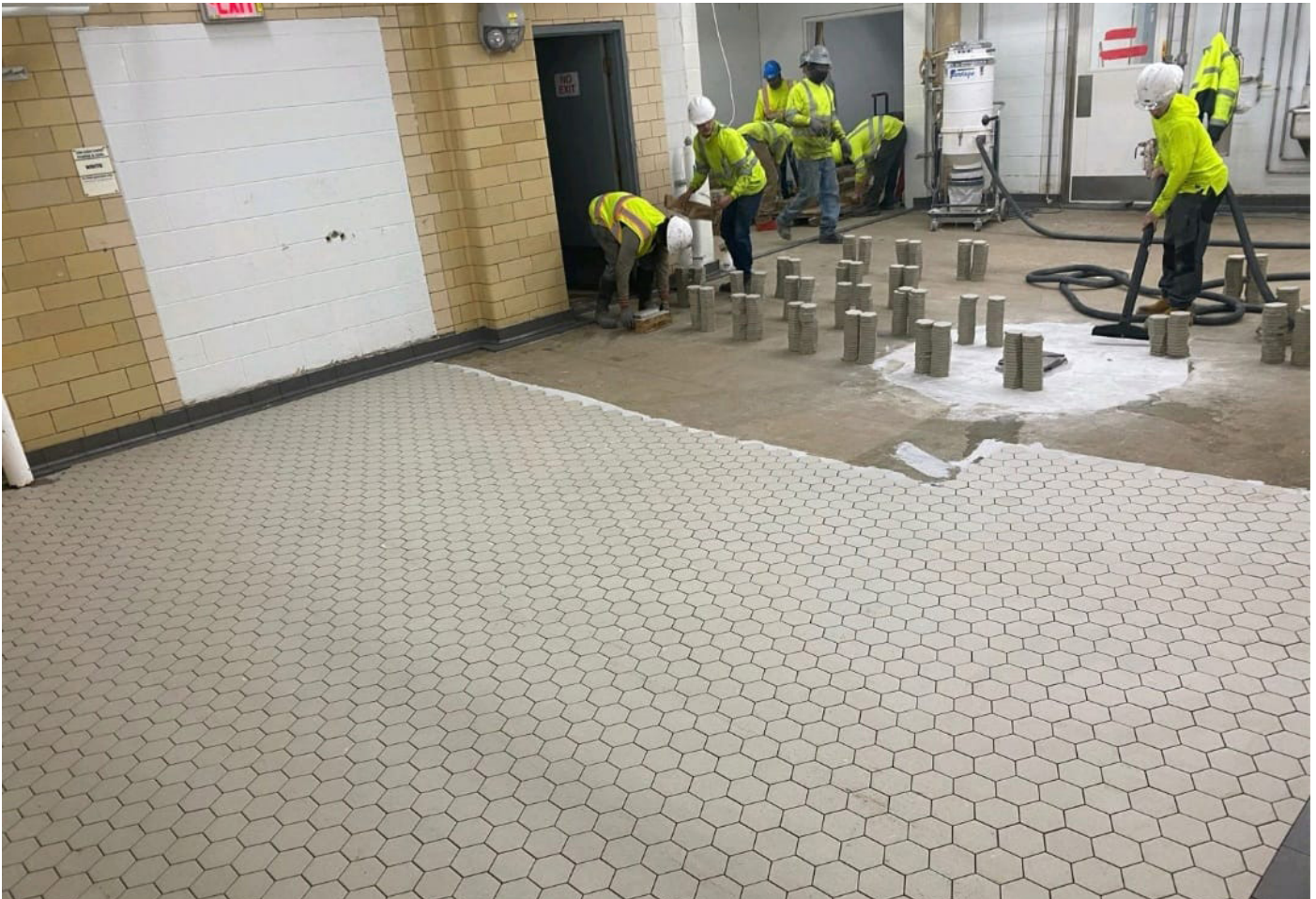
June 2021

INSIDE THIS ISSUE:

Corrosion Protection High-Performance Mortars

- ◆ Furan/Carbon Filled Furan
- ◆ Potassium-Silicate
- ◆ Carbon Filled Phenol
- ◆ Novolac Vinyl Ester
- ◆ Epoxy
- ◆ Sodium-Silicate

CORROSION PROTECTION USING TILE & MORTAR SYSTEMS



Corrosion resistant systems, whether developed through the use of anti-corrosion materials or employing the corrosion preventive compounds and coatings are assured ways to effectively reduce the total ownership costs in industries.

Since the advent of corrosion protection technologies, corrosion resistant tile/brick linings have been prime material amongst many protective systems. The high durability as well as the diverse and practical features of the corrosion resistant tile & mortar systems have made them a very popular lining option in various plants and indispensable in maintaining industrial facilities.

In this regard, anti-corrosion mortars are considered as the essential element to set a complete tile/brick system, protecting the concrete and steel substrates at risk of damage mainly by corrosive chemicals. Anti-corrosion mortars act as a shielding layer that is devoid of all kinds of interfering chemical properties, offering notable mechanical features and chemical resistances; hence, they are widely used for bedding and jointing purposes under and in between the laid tiles or bricks.

Tile & mortar systems are reliable choices for protecting areas which are not only exposed to severely corrosive media, but are also subjected to direct mechanical stresses of vehicle load and displacement, vibrations, impact of heavy tools or heavy equipment and machinery. When the environment is both chemically and mechanically aggressive, tile & mortar systems provide a better alternative to the common reinforced epoxy flooring systems in effectually withstanding harsh conditions.

HIGH PERFORMANCE MORTARS



High performance mortars are utilized to maintain, retrofit or repair diverse types of new and existing structures including floors, concrete surfaces, sewage separators, gas inlet nozzles, large industrial chimneys, self-supporting domes, sumps, tanks, canals, etc. Anti-acid & alkali resistant mortars help decelerate the permeation of corrosive elements onto the corrosion vulnerable substrates, thereby reducing the corrosion rate considerably and sustaining the durability of industrial facilities.

High performance mortars are preferred alternatives to concrete/cement pastes, considering that exposure to acidic/corrosive chemicals causes deterioration of their alkaline components (mainly calcium compounds). Owing to their mechanical properties, less porous microstructure and considerable chemical resistance against severe corrosive conditions, these mortars are also regarded a superior replacement for conventional epoxy-based grouting compounds.

IMPORTANCE OF MORTAR SELECTION & INSTALLATION

To enhance the functionality and performance of tile/brick lining systems effectively, making the appropriate choice among anti-acid & alkali mortars is crucial. Maximum chemical exposure can compromise the surface integrity and is therefore, a challenge that necessitates taking the variety of the chemical resistances into consideration for mortar selection to ensure the lining will durably tolerate expected exposures.

In case of improper mortar selection, the consequences may vary from a considerable decrease of adhesion between tile/brick and the bedding mortar, to the imperceptible penetration of corrosive fluids through the sublayers, resulting in widespread corrosion through the substrate and finally destruction of structures/apparatus.



Accordingly, defects caused as a result of inappropriate mortar selection are not often visually detectable until the substrates are notably deteriorated, in which case, exorbitant costs are required for reconstruction. Therefore, choosing the mortar which precisely conforms to the process specifications is necessary to ensure the longevity of assets while saving time and money.

The installation process of the tile & mortar linings should be carefully customized to result in a protection system that is up to standard, meeting the project goals within the budget and time constraints. For instance, the mechanical/manual mixing of the mortar components, i.e. Resin & Powder, must be done thoroughly and at a slow speed. Lastly, the mortar should be applied attentively and with exactitude to prevent cracks, thereby, maintaining the stability, strength, durability and monolithic nature of the lining system.

HEGSEL® MORTARS

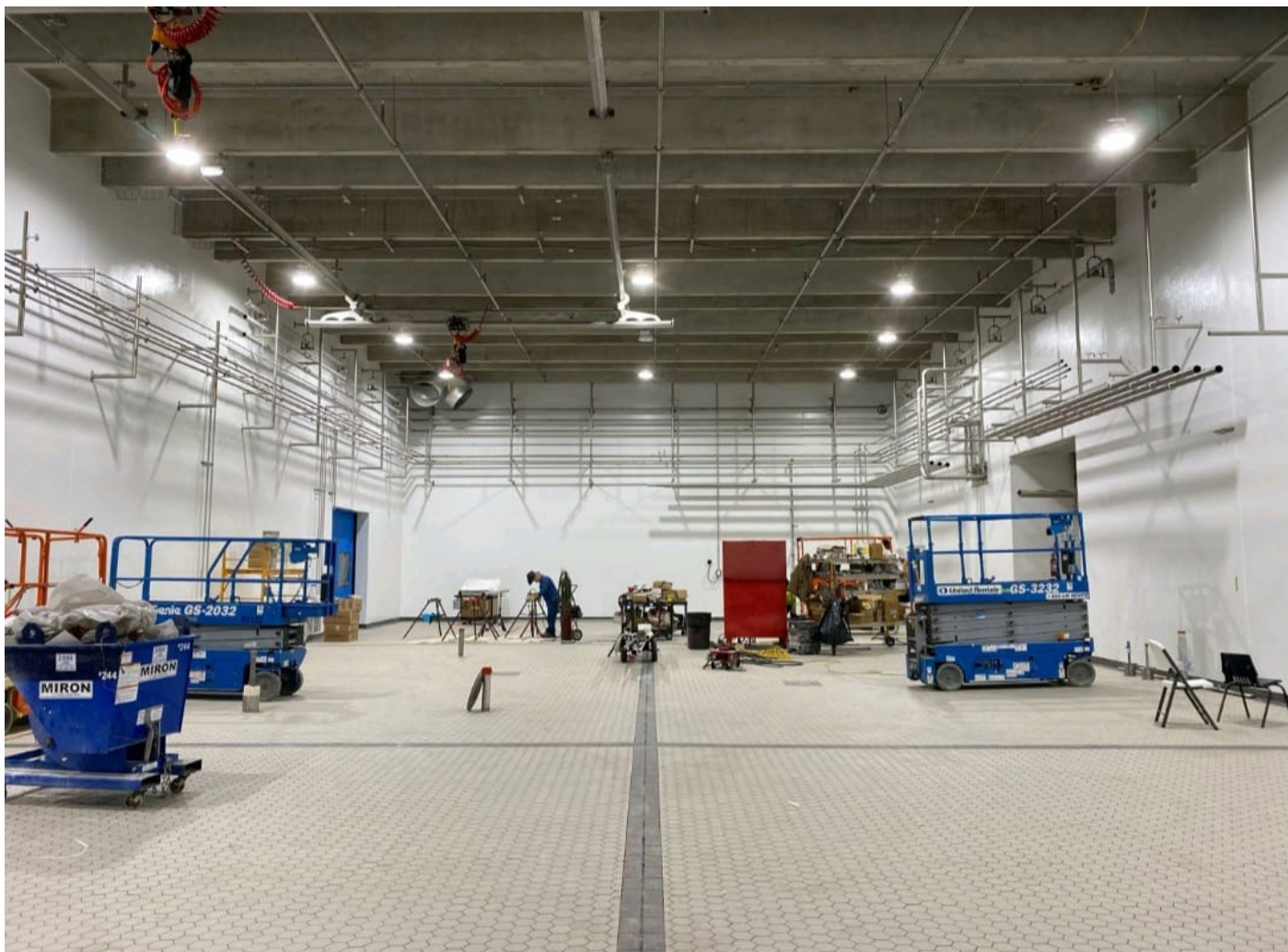
HEGSEL Tiles & Mortars are considered reliable cost-effective solutions for corrosion protection or repairing various structures including concrete and metal surfaces. HEGSEL Mortars are commonly installed as acid/alkali resistant materials in chemical processing, refineries, petrochemicals, power plants, metal treatment, waste water treatments, acid and process industries, etc. HEGSEL Mortars are used primarily for laying and grouting tiles/bricks as well as molding to create chemically, thermally and mechanically resistant coatings and protective linings.

HEGSEL Mortar products, characterized by their low-porosity and impermeable structure, demonstrate consistent mechanical properties, great adhesion to substrates and an extensive range of chemical resistance against acids, alkalis, oils and corrosive solvents. The only requirement is to mix the resin and powder components in proper ratios thoroughly and carry out the convenient one-process application; the chemical microstructure of HEGSEL Mortar components would then enable the very simple curing process at ambient temperature and in a short time.

Due to the multifarious chemical composition designed for each product, HEGSEL Mortars category encompass outstanding resistance to a wide variety of acids and alkalis; when taking the process conditions into consideration, recommendations on selection as well as installation would be provided by HEGSEL Technical Experts.

In conditions where spills/shedding and leaks of both concentrated acids and alkalis within the worksite occur, it would not always be possible to apply different mortars to meet various process conditions at the same operation area. For example, Furan-based mortars are not resistant against highly concentrated acids or Potassium-Silicate Mortars cannot effectively withstand alkaline environment. For this purpose, Phenol-based & Novolac Vinyl Ester-based HEGSEL Mortars are exclusively designed to resist against strong acids & alkalis simultaneously; additionally, carbon filled products are extremely resistant towards concentrated Hydrofluoric acid.





Based on the chemical composition of their resin bases, HEGGEL mortars are categorized into the following subgroups:

- Furan/Carbon Filled Furan
- Potassium-Silicate
- Carbon Filled Phenol
- Novolac Vinyl Ester
- Epoxy
- Sodium-Silicate

APPLICATION AREAS:

- ✓ Canals
- ✓ Pits
- ✓ Floors
- ✓ Sumps
- ✓ Secondary containments
- ✓ Reservoirs
- ✓ Chemical storage warehouse and workshops
- ✓ Pickling lines
- ✓ Pulp & paper industry
- ✓ Neutralization tanks
- ✓ Steel industry & etc.

ADVANTAGES:

- + Excellent chemical resistance against a wide range of chemicals, from diluted to highly concentrated acids & alkalis
- + High mechanical strength
- + Easy application
- + Impervious surface
- + High temperature resistance
- + Excellent performance
- + Cost-effectiveness
- + Long-life service
- + High compressive strength

HEGGEL® FU 633



2-Component Furan-based Mortar

CHARACTERISTICS:

- High chemical resistance against strong acids/alkalis, solvents and organic compounds
- Impressive mechanical properties
- Fast-setting product with excellent adhesion to ceramic and carbon bricks

PHYSICAL PROPERTIES:

- Compressive Strength: 38 N/mm²
- Max Operating Temperature: +188°C
- Water absorption: 0.2%

HEGGEL® PL 621



2-Component Phenol-based Mortar with Carbon Fillers

CHARACTERISTICS:

- Excellent adhesion to ceramic and carbon bricks
- Extremely high chemical resistance, especially to acids and solvents
- Electrical conductivity
- Easy application because of dust free fillers

PHYSICAL PROPERTIES:

- Compressive Strength: 60 N/mm²
- Hardness Shore D: > 50
- Max. Operating Temperature non-immersed: +180 °C

HEGGEL® SP 660



2-Component Halogen-free Potassium Silicate Mortar

CHARACTERISTICS:

- Extremely high acid resistance
- High temperature resistance up to +900°C
- Excellent resistance to water and rinsing actions
- Halogen-free, containing no Fluoride

PHYSICAL PROPERTIES:

- Compressive Strength: 30 N/mm²
- Hardness Shore D: > 20
- Coefficient of Thermal Expansion: 12×10^{-6} 1/K
- Max. Operating Temperature Liquids: +900 °C

HEGGEL® VE 640



CHARACTERISTICS:

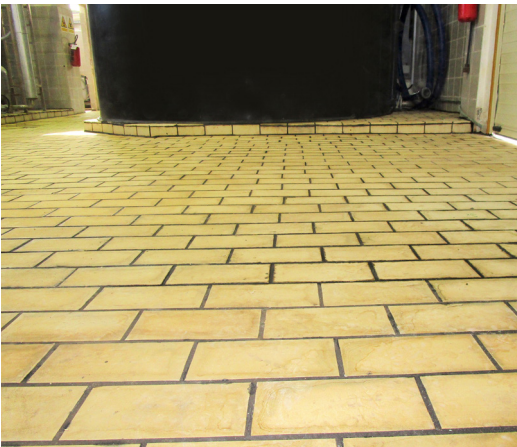
- Great mechanical resistance
- Excellent chemical resistance, especially against oxidizing media, and many organic compounds
- Fast curing

PHYSICAL PROPERTIES:

- Compressive Strength: 80 N/mm²
- Coefficient of Thermal Expansion: 35×10^{-6} 1/K
- Max. Operating Temperature Liquids: +150 °C

2-Component Novolac vinyl ester-based mortar

HEGGEL® Tile



CHARACTERISTICS:

- Low water absorption
- Outstanding compressive and flexural strength
- Exceptional corrosion resistance to severe environments

PHYSICAL PROPERTIES:

- Bulk density: 2,30 g/cm³
- Water absorption: < 0,9 %
- Cold crushing strength: 175 N/mm²
- Anti-slip properties: R11 (19,1°) / C (31,9°)

Acid-Resistant Porcelain Ceramic Tiles