



You Build, We Protect!

NEWSLETTER

HEGGEL® Flake 710

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Glass Flake Filled
Polymer Coating**

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Polymer Reinforcement with Impermeable Flakes

Polymer coatings and linings, though well-fortified in their microstructure for corrosion protection, are still permeable to corrosive agents. Incorporating pigments and fillers, whether inert or active, is a method to effectively enhance anticorrosion properties of polymer coatings through physical, chemical and electrochemical mechanisms delaying corrosion through increasing the lag time for penetration.

In the range of high-performance binder systems, glass flake pigmentation is widely used to produce coatings with improved mechanical properties, better adhesion and increased abrasion resistance, capable of withstanding a broad range of corrosive chemicals, even at elevated temperatures.



Barrier improvement by addition of flake fillers into the polymeric coatings is an economical approach offering a more durable protection against corrosion. Inert pigments of glass flakes effectively prevent corrosion progression by physical barrier mechanism i.e., lengthening diffusion pathways through coating to considerably reduce permeation. In the lamellar barrier structure formed by aligned impermeable flakes, diffusion area is greatly reduced and consequently, the anti-corrosion stability of the polymer coating is highly ameliorated.

Robust Protection Novolac Vinyl Ester Flake Systems

Having the ultimate performance in corrosion protection in terms of chemical and temperature resistance, novolac glass flake-filled vinyl ester coatings dramatically decrease the rate of permeation of corrosive elements into the substrates exposed to frequent and severe chemical attacks. The presence of glass flakes efficiently adds to the anti-corrosion performance of the thermoset matrix of polymer, while decreasing the porosities and restraining the diffusion path for deleterious species through the coatings.

The combination of highly chemical resistant resin of novolac vinyl ester with flake fillers is important for immersion or wet services in contact with harsh alkalis, acids and destructive chemicals at elevated temperatures to establish excellent corrosion resistance, high degrees of reinforcement and modified physical and mechanical properties.

Reinforced VE systems are ideal for corrosion-control applications when high durability, thermal stability, and high corrosion resistance are of performance requirements. Therefore, they are extensively used for protection of critical industrial assets such as chemical storage tanks, vessels, scrubbers, ducts, stacks, flue gas desulfurization (FGD) equipment and in any environment where severe chemical attack is a concern.



Commonly known as scrubber, the flue gas desulfurization (FGD) processing unit is a critical part of power plant, eliminating sulfur dioxide (SO_2) from the exhaust flue gases. Without a FGD unit, released gases and contaminations into the atmosphere could negatively affect the air quality, the environment and also cause multiple ailments.

For instance, released SO_2 could be oxidized within airborne water droplets, forming sulfuric acid (H_2SO_4) as acid rains. Accordingly, the FGD unit is employed for sulfur-based contaminant removal gas treatment; and its continued operation is necessary to ensure compliance with global regulations associated with environmental pollutant emissions.



Depending on the scrubbing method, the FGD process may differ; however, there are several pieces of equipment common among all units including steel ducts, absorbers, Gas to Gas Heaters (GGH), Bypass damper, etc. These parts majorly experience highly corrosive/wear conditions due to the combined exposure of corrosive flue gases and solutions, the possibility of abrasion and high temperatures during normal operation and upset conditions.

All the present material in FDG system including scrubbing solutions, abrasive wet lime slurry, acidic gases, high degrees of corrosive contaminations including heavy metals, dissolved solids, halide concentrations in FGD purge waters and low pH / high chloride environments are severely corrosive. In addition, considerable wear and tear on tanks and piping systems creating high abrasion areas in FGD unit can result in premature coating wear, degrading the underlying equipment.

Crevice corrosion, pitting corrosion, fluoride-induced under-deposit attack, and acid attack are of the greatest menaces to the FGD system increasing the risk of failure. Accordingly, to maintain the optimized performance of FGD unit and reduce potential damage to the system overall, selection of the proper coating is vital to efficiently withstand aggressive conditions and ensure flawless operation of the equipment in various modes.

Robust corrosion protection across multiple parts of FGD processes requires a coating of extreme chemical, wear/erosion and thermal resistance, with simple installation procedure to fully meet protection standards.

Concurrently resistant against corrosion and high temperatures, impermeable glass flake coatings and linings are globally popular, and have been proven to be very effective in FGD systems for the required properties.

Demonstrating superior thermal and corrosion resistance properties, **HEGSEL Flake 710** best matches a wide range of cost and performance criteria to uphold the integrity of FGD system, protecting industrial assets and their longevity.

Additionally, **HEGSEL Flake 710** has been developed based on novolac vinyl ester resin which immensely improve the chemical resistance of the coating.



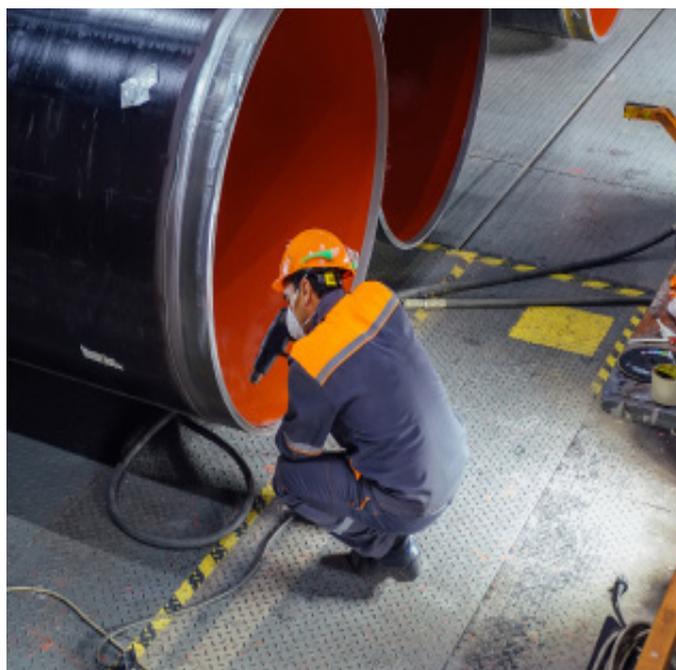
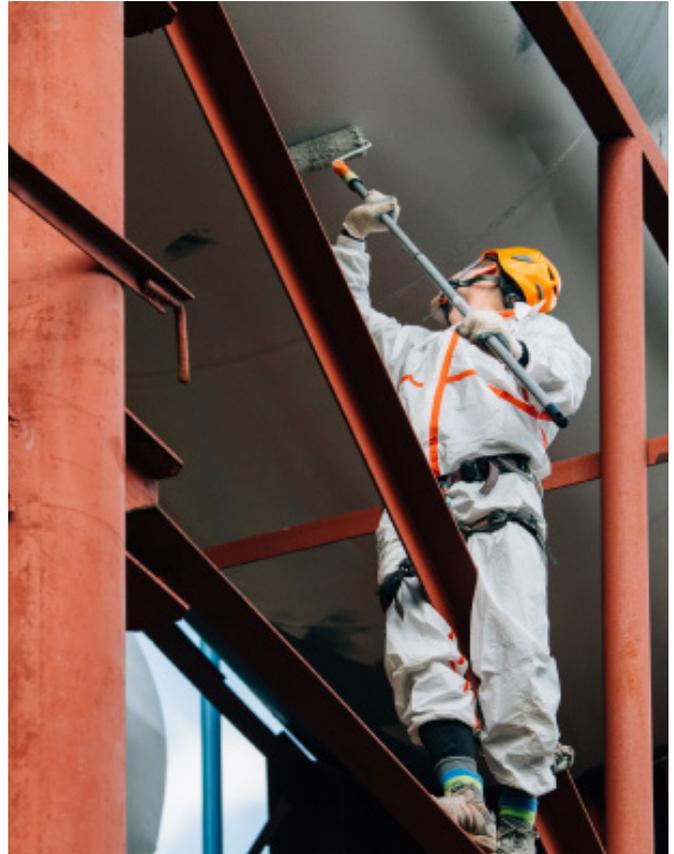
HEGGEL® Flake 710

Two - Component Glass Flake Filled Polymer Coating

Offering excellent corrosion resistance against specific harsh chemicals including highly concentrated acids, alkalis, solvents, acidic gases, etc., **HEGGEL Flake 710** is a novolac vinyl ester resin-based coating integrated with glass flakes of optimized aspect ratio, providing added protection against high temperature exposures, as well as outstanding mechanical properties.

With modified physical properties, The monolithic coating, **HEGGEL Flake 710**, considerably reduces the risk of adhesion failure and delamination of the coating, ensuring long protection for critical areas of industry.

Glass flake reinforcement in **HEGGEL Flake 710** dramatically decreases the corrosion path to the substrate i.e., reduction in the coating permeation rate to the substrate, resulting in a more durable protection in extreme corrosion applications.



Moreover, aligned glass flake fillers in **HEGGEL Flake 710** are impermeable barriers and in turn effective in withstanding high medium temperatures.

HEGGEL Flake 710 innovatively combines corrosion, abrasion and erosion resistance with a better stability at elevated temperatures to protect a wide range of plants and equipment.

Cost effective implementation of **HEGGEL Flake 710**, both in surface preparation and installation processes, along with the reduced installation time due to its short curing and easy application, and the positive economic impacts on construction and repair schedules compared to the traditional multi-coat systems, are of other outstanding features of this product.

Application

HEGSEL Flake 710 Provides superior protection against deteriorating environments at high medium temperatures with some degree of erosion or abrasion, such as piping and process vessels in the upstream and downstream oil and gas sectors as well as petrochemical and chemical industries.

This makes the product an excellent choice to deliver anti-corrosion properties at much lower film thickness. Moreover, **HEGSEL Flake 710** is an applicable choice for challenging repair and maintenance scenarios.

Common applications of **HEGSEL Flake 710** include:

- ✓ Raw gas and clean gas ducts
- ✓ Heat exchangers
- ✓ Flue gas scrubbers
- ✓ Wet electric filters
- ✓ Stacks & gas pre-heaters of flue gas desulphurization (FGD) plant
- ✓ Offshore & onshore structures & vessels
- ✓ Cooling towers
- ✓ Pressure vessels
- ✓ Storage & process tanks



The product is also used in other plant components which are exposed to acid fumes and gases. **HEGSEL Flake 710** is also well suited as a corrosion protection coating for wastewater treatment plants, stack gas scrubbers, waste incineration plants and biogas plants.

Technical Data	Standard	Unit	Value
Max. Operating Temperature Dry (Flue Gas)	-	°C	+180
Short-term Operating Temperature Dry (Flue Gas)	-	°C	+220
Density (Mixture)	EN ISO 2811 (ASTM D1475)	g/cm ³	1.19±0.03
Viscosity	EN ISO 2555 (ASTM D2196)	mPa.s	3000±250
Abrasion	ASTM D4060	mg	90
Tensile Strength	EN ISO 527 (ASTM D638)	N/mm ²	20
min. Adhesion Strength Steel	EN ISO 4624 (ASTM D4541)	N/mm ²	7
Hardness Barcol	EN 59 (ASTM D2583)	-	≥35
Modulus of Elasticity (Bend Test)	EN ISO 178 (ASTM D790)	N/mm ²	3500 ± 500