



You Build, We Protect!

NEWSLETTER

HEGGEL® Corr

April 2021



INSIDE THIS ISSUE:

Dedicated Focus on
Performance
and Efficiency

- Superior Chemical Resistance
- Easy Single Layer Application
- Self-Priming
- Easy Repair
- Solvent-Free & Eco-Friendly
- Temperature Resistance

High-Performance Products

Irreversible corrosion along with aging infrastructures raises the risk of failure as well as posing a serious threat to lives and equipment. In view of this, corrosion prevention must be undertaken to keep existing structures and equipment in working order.

When it comes to surface protection, HEGGEL innovative anti-corrosion coatings with advanced formulation outperform any other coating option. By utilizing proven technologies, HEGGEL, as a leading manufacturer of protective coating systems, has designed high-performance innovative products coined HEGGEL Corr to meet strict corrosion challenges within diverse operating/ process conditions in Oil & Gas industry.



Traditional coatings and linings such as rubber linings, multilayer coatings, PTFE, glass linings, GRP, FRP, etc. have long been used against the ever-present threat of corrosion in various industries. With increasing awareness of the potential problems associated with these conventional coatings, such as material supply, installation and maintenance, finding a more effective and long-lasting solution has become vital to all industries.

In response to this, the one-of-a-kind HEGGEL Corr coatings has been exclusively designed to resist aggressive conditions thanks to their hybridized epoxy polymer matrix reinforced with lamellar non-leaving micro-particles. The implementation of modern techniques to design its unique molecular structure has considerably increased the impermeability of the coating to protect the equipment exposed to severely corrosive chemical attacks.

Offering specialized corrosion protection, HEGGEL Corr coatings provide effective solutions to keep equipment performing efficiently while resolving the material and installation challenges far beyond conventional lining and coatings.

Effective Resistance Against Severe Chemical Conditions

Conventional coating and lining systems including rubber linings, known for their high chemical resistance, are only protective against a limited range of chemicals, while HEGGEL Corr coatings effectively offer a wide range of chemical resistance from dilute acids and alkaline to very concentrated ones such as sour gas in severe circumstances. HEGGEL Corr is one of the few resin-based coatings that is highly resistant in various extremely corrosive chemicals:

- ✓ Spent amines rich in H₂S/CO
- ✓ Amines (DEA, MDEA, MEA, DGA)
- ✓ Sulphuric acid 98%
- ✓ Hydrochloric acid 37%
- ✓ Carbon disulphide
- ✓ Molten Sulphur+ acidic vapor
- ✓ Nitric acid 50%
- ✓ Phosphoric acid 84%
- ✓ Sodium hydroxide 50-75%
- ✓ Hydrofluoric acid 70%
- ✓ Glacial acetic 100%
- ✓ Sodium hypochlorite

Easy to Apply Single-layer Coating with Optimum Thickness

The application of conventional coating and lining systems, Rubber lining and FRP is complicated because the installation process instructions should be precisely followed in time-consuming intervals. It is also expensive to have to reapply multilayer coatings. Rubber lining, specifically, has more restrictions due to its complicated curing conditions, hard repair and maintenance process.

HEGGEL Corr has a clear advantage over traditional coatings by offering a self-priming product that just needs one single layer application, and with curing at ambient temperature the coating process is complete. The tack free time is very short as well and depending on the type of HEGGEL Corr product may take up to 160 minutes. A single layer of high-build HEGGEL Corr coating with adequate thickness (above 3000 microns) benefits from a considerably superior physical properties and mechanical strength.

Blistering occurs prevalently on industrial equipment with traditional multilayer solvent-based coatings. In case the application procedure is not carried out with great care, the solvent may be trapped between the layers. Overtime, the coating starts to blister or turns porous and spongy. The porosities will in turn exacerbate the coatings permeability and render it less effective against corrosion. In contrast, as a solvent-free coating, HEGGEL Corr has effectively eliminated the risk of blistering defect.



Easy Repair

Time is a limiting factor in overhauls of various sectors of industries such as Oil & Gas. Subsequently, it is very important to choose a coating with long service life and easy repair capability. Contrary to the time-consuming repair of multilayer coatings and linings such as FRP, and also the difficulties in the repair of rubber linings, HEGGEL Corr single-layer coatings repair procedure can be performed extremely conveniently and in a very short time.

Self-Priming Capability

Since the strength of adhesion is an essential prerequisite for any coating and directly affect its performance; conventional epoxy-based primers with a maximum adhesive strength of 5 MPa are still prone to peeling. While the state-of-the-art technical enhancements of self-priming HEGGEL Corr coatings bring an adhesion strength up to 30 MPa (cohesive failure) which is 6 times higher than the adhesion of common primers and multilayer coatings to the substrate.



Eco-friendly Solvent-free Coatings

Most polymeric coatings shrink during and due to chemical reactions, solvent evaporation or the combination thereof. Coating adhesion prevents shrinkage from occurring freely but at the same time solvent evaporation and the resulted stress can accelerate the molecular motion to cause failure of the coating.

On the other hand, the thickness of the coating is directly affected by solvent evaporation. In conventional solvent-based coatings as a result, of this evaporation, the Wet Film Thickness (WFT) application differs considerably from the Dry Film Thickness (DFT) of the solidified layers. In fact, the notable portion of the costs has been paid for a solvent which has no effect on the final DFT of the coating.

Moreover, as mentioned, blistering and porous/spongy structures are consequences of trapped solvents in conventional multilayer solvent-based coatings that severely deteriorate the impermeability of the coating.

Solvents are also destructive to environment by releasing toxic volatile organic compounds (VOCs) during the drying process and have a hazardous impact on human health. Therefore, providing costly industrial fans, vents and hoods is inevitable to mitigate the pollution.

HEGGEL Corr solvent-free products with a Volume Solid of 100% has efficiently responded to these technical and environmental concerns.

Temperature Resistance

While the conventional coatings such as resin-based, Fiberglass, rubber lining, etc. can hardly exhibit more than 100° C heat resistance, HEGGEL Corr is resistant to up to 225° C at immersed and up to 280° C at non-immersed exposure.

Humidity

Humidity is a restricting element during surface preparation and the application of the coatings. Compared to the commonly used epoxy coatings which are applicable at a maximum humidity of 50% for surface preparation and 65% during the application process, even at a humidity level of 80% HEGGEL Corr is applicable without any costly requirements to air circulation prior the coating procedure.

HEGGEL® Corr Application Areas:

- ✓ Sour gas treating-amine units
- ✓ (DGA/MDEA/MEA)
- ✓ Amine Molten Sulphur recovery tank
- ✓ Hydrocarbon pressure vessels
- ✓ Internal pipe lining
- ✓ Chemical tanks
- ✓ Road/sea chemical tankers
- ✓ Concrete walls/floors
- ✓ Secondary containment areas
- ✓ Process vessels
- ✓ Condensers
- ✓ Amine regenerators
- ✓ External coating for insulated pipes
- ✓ Evaporators
- ✓ Scrubber units
- ✓ Heat exchangers
- ✓ Neutralization sumps
- ✓ Distillation units
- ✓ Autoclaves
- ✓ Sulphur recovery units
- ✓ Equipment operating at sub-ambient temperatures



HEGGEL® Corr: Most Effective Replacement For

- ✓ Rubber lining systems
- ✓ FRP Lining
- ✓ Glass flake reinforced coatings
- ✓ Phenolic Epoxy-based coatings
- ✓ Modified Epoxy Novolac based coating

HEGGEL® Corr Widely Used Products

HEGGEL® Corr 210



High-Tech Corrosion Resistant Coating

Advantages:

- ✓ Excellent broad range chemical resistance against concentrated acids & alkaline
- ✓ In situ application to exterior of hot surfaces
- ✓ Temperature resistance of 190°C immersed & 250°C non-immersed
- ✓ Very high fouling resistance
- ✓ Resistant to CUI conditions

HEGGEL® Corr 212



Advanced Corrosion Resistant Semi Paste-Grade Coating

Advantages:

- ✓ Excellent broad range chemical resistance
- ✓ Amines/H₂S resistance at high temperatures
- ✓ Temperature resistance of 225°C immersed & 280°C non-immersed
- ✓ Resistant to CUI conditions
- ✓ Very high fouling resistance

HEGGEL® Corr 220



High Aggressive Chemical Resistant Coating

Advantages:

- ✓ Nano-technology based coating with ultra-high resistance to full immersion in concentrated organic/mineral acids, alkalis and solvents at room and elevated temperatures
- ✓ Excellent adhesion
- ✓ Excellent abrasion resistance
- ✓ Temperature resistance of 130°C at immersed & 150°C non-immersed