HEGGEL®

You Build, We Protect!

NEWSLETTER

HEGGEL® Corr 230

June 2022

INSIDE THIS ISSUE:

Heat-Resistant Advanced Protective Ceramic Coating

- Corrosion At High-Temperatures
- Exhaust Gas Systems
- High-Temperature Coatings
- HEGGEL Corr 230 Features
- Application Areas

Corrosion at High Temperatures

Elevated temperatures considerably contribute to increasing the corrosion active centers on metallic surfaces, accelerating corrosive processes.The occurrence of corrosion at high temperatures does not essentially require a liquid medium for the interaction of electrons, since the corrosion mechanisms can take place as a result of the direct interaction between metal substrates and non-liquid mediums. High-temperature corrosion caused as a result of chemical attacks from gaseous atoms, molten or solid salts and metals typically at temperatures above 400°C are among such instances.

High-temperature corrosion is a serious concern in various industries including:

- ✓ Oil and Gas
- ✓ Refining and Petrochemical
- ✓ Power Generation
- ✓ Gas Turbine
- ✓ Chemical, Metallurgical and Mineral Processing
- ✓ Waste Treatment
- ✓ Heat Treating

Depending on the temperature, the material of the equipment and the chemical exposures to the substrates, corrosion mechanisms may become activate, affecting the corrosion rate and products and resulting in widespread corrosion damages such as scaling, material loss, drop in physical properties, etc.

Oxidation is the most prevalent form of high-temperature corrosion, arising when hot gaseous mediums, containing deteriorating contaminations, come in contact with industrial facilities like gas turbines, diesel engines, exhaust stacks from oil rig engines, furnaces, etc.

Although material selection may, to some degree, ameliorate the corrosion progress thermodynamically and kinetically, it is essential to provide industrial structures and equipment operating at high temperatures with enough corrosion protection, in order to establish a safe working environment as well as a durable satisfactory technical performance.

Exhaust Gas Systems

Exhaust gas, also known as flue gas, is emitted as a result of fuel combustion, and discharged into the atmosphere through stacks, exhaust pipes, propelling nozzles, etc.

Exhaust gas systems of engines are comprised of ducting to convey the hot gases from the engines to a dedicated exhaust stack for each engine. Improving the performance of the engines and consequently, optimizing the fuel consumption are among the main functions of industrial exhaust systems.

The engine exhaust gas exits the stacks at temperatures even greater than 500°C. Therefore, protection of components in the exhaust systems at high-temperature corrosive environments is of paramount importance to prevent industrial equipment failure.

Heat-Resistant Coatings

High-temperature resistant coatings are frequently used in numerous industrial applications through oil and gas, refineries, petrochemical, power plants, offshore rigs, aerospace, manufacturing, etc., where extreme-temperature processes are utilized to prevent corrosion of metal substrates against harsh environments while in service. The facilities are often made up of several components such as ducts, vessels, piping, tanks, etc. requiring protection against corrosion attacks at high temperatures.

High-temperature resistant coatings are designed to withstand exposures to elevated temperatures in excess of 500°C while providing corrosion protection.

Technical requirements of high-temperature coatings may vary depending on whether the construction is new, repair purposes or service conditions for in-situ coating applications, specifically on hot surfaces; nevertheless, the primary technical feature of a heat-resistant coating is an efficient performance over a broad operating temperature range. Furthermore, regarding the application, it would be advantageous for the high-temperature coatings to be fast-curing and user-friendly so that the time-consuming installation process and extended down time are effectively avoided.

High-Temperature Coating Types

Applicable coatings for high-temperature services, composed of either organic or inorganic constituents, could be commonly sorted under multiple categories including epoxy, phenolic epoxy, novolac epoxy, silicon or more specialized categories such as multi-polymeric coatings.

Though allowably protective against severe process conditions from both corrosion and temperature aspects, conventional high-temperature coatings give rise to certain considerations, for instance: Excessive heat would deteriorate the chemical bonds in epoxy coatings, leading to degradation of the coatings or decreased weatherability. The relatively slow curing process could be a disadvantage of epoxy phenolic coatings; or in some silicon coatings total cure would be achieved after being exposed to the temperature range of 176-204°C.

HEGGEL Corr 230 is a state-of-the-art copolymeric, high-temperature coating demonstrating remarkable anti-corrosion performance with a single coat application.

With rapid curing at ambient temperature, **HEGGEL Corr 230** provides a smooth and semi-gloss finished surface to prevent the accumulation of sediments for full corrosion protection.

HEGGEL® Corr 230

High-Temperature Inorganic Anticorrosive Coating

HEGGEL Corr 230 is a novel protective coating, offering high-performance anticorrosion capabilities at high temperatures.

With an innovative formulation, **HEGGEL Corr 230** has excellent adhesion to both metallic and refractory surfaces.

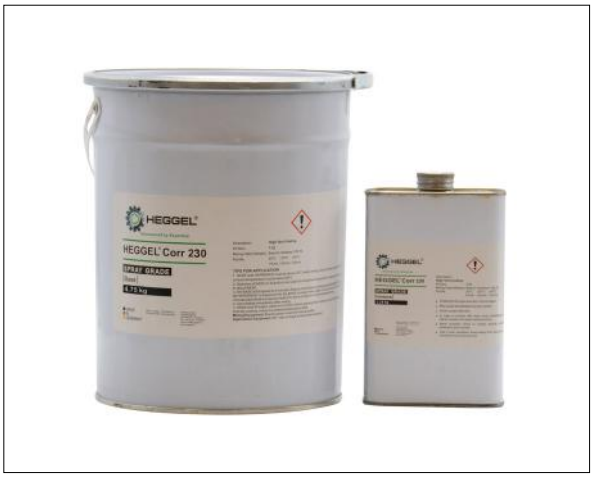
With clear indication of a stable barrier effect at high temperatures, **HEGGEL Corr 230** is very well fit for purposes involving exposure to temperatures exceeding 550°C.

Impermeable properties of **HEGGEL Corr 230** provide very long-lasting corrosion resistance features against aggressive chemicals to prevent destructive effects such as disbondment, delamination, cracking, etc., at elevated temperatures.

The advanced copolymeric microstructure of **HEGGEL Corr 230**, with an even application, demonstrates outstanding mechanical properties and effectively reduce repair sequences while maintaining system integrity against corrosion attacks at high temperatures.

Characteristics

- ✓ 100% solid content
- ✓ Self-priming
- ✓ Ambient curing
- ✓ Thermal shock resistance
- ✓ Excellent chemical resistance
- ✓ Very good abrasion resistance



Technical Data	Standard
Adhesive Strength (ASTM D4541)	8.3 MPa cohesive failure
Continuous Temperature Resistance	550°C
Intermittent Temperature Resistance	600°C
Salt Spray Test	ASTM 117 Tested on heat aged samples 1000 hours - no damage
Resistant Against Thermal Cycling	Up to 5 cycles from ambient to 500°C - no damage

Application Areas

- ✓ Internal coating of blower fans
- ✓ Exhaust vents
- ✓ Stacks
- ✓ Turbines
- ✓ Generators
- ✓ Boiler exhaust pipes
- ✓ Structures operating at elevated temperatures
- ✓ Engine exhausts