



You Build, We Protect!

NEWSLETTER

HEGSEL® Corr 220 AF

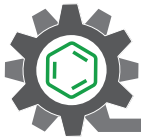
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Innovative Coating
Solution for Enhanced
Operational Efficiency**

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◆ Nano-Tech Anti-Fouling Coating for Harsh Environments

Fouling Facts: Challenges and Impact on Equipment Efficiency

In the high-stakes arena of oil and gas production, maintaining efficient operation of equipment is paramount. A significant challenge in achieving this efficiency is combating "fouling", a phenomenon that can lead to decreased equipment performance, increased energy consumption, and heightened maintenance costs.

Fouling occurs when unwanted materials such as scale, sludge, salts, and biological matter accumulate on the surfaces of pipes, heat exchangers, and other critical equipment. This buildup often results from chemical reactions between the fluids being processed and the equipment materials, or from the deposition of solids from the processed fluids.

◆ Fouling Key Categories

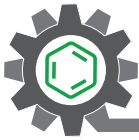
Chemical Fouling occurs due to chemical reactions, resulting in deposits like carbonate or sulfate scales.

Biological Fouling involves the growth of microorganisms, algae, or bacteria, forming biofilms that can corrode and clog equipment.

Particulate Fouling is caused by the deposition of suspended solids, such as sand or silt.

Corrosion Fouling happens when metal surfaces degrade, and corrosion products deposit on the equipment.





Far-Reaching Consequences of Fouling in Oil and Gas Operations

Fouling poses significant challenges to the effectiveness and longevity of equipment in the oil and gas industry. It notably affects thermal processes by reducing heat transfer, blocking fluid flow, and accelerating equipment wear and tear. In heat exchangers, for example, fouling can cut heat transfer efficiency by up to 50%, which translates to higher energy costs and diminished system performance.

Beyond these operational inefficiencies, fouling can lead to several other destructive effects: Frequent downtime for cleaning and maintenance increases operational expenses. The need for additional fuel to achieve the same output when heat transfer efficiency is compromised also drives up costs. Fouling can lead to overheating and pressure build-up, which are significant safety hazards,

particularly in environments dealing with combustible materials.

Increased fuel consumption due to inefficiencies results in higher emissions of CO₂ and other pollutants, contributing to environmental degradation.

Prolonged fouling without adequate maintenance can cause irreversible equipment damage, and the associated corrosion can lead to costly equipment failures and unplanned shutdowns.

The combined effects of fouling and corrosion underscore the critical need for comprehensive management strategies in the oil and gas industry.

These strategies are essential to maintain operational efficiency, protect equipment, ensure safety, and minimize environmental impact, ultimately safeguarding the industry's bottom line.





Protective Measures

Effective fouling management includes regular monitoring, mechanical cleaning, chemical cleaning, and the use of anti-fouling coatings or additives. Advanced techniques such as predictive maintenance strategies powered by data analytics are increasingly being adopted to forecast fouling rates and determine optimal cleaning schedules.

Innovation in Fouling Management

The oil and gas industry continuously seeks innovative solutions to effectively mitigate fouling and enhance operational productivity. In pursuit of this, the industry has adopted several strategic approaches, each tailored to address specific facets of fouling:

Developing more resistant materials involves research and development efforts focused on creating alloys and composite materials that are less susceptible to the corrosive and clogging effects of fouling. These materials can withstand harsh environments and reduce the frequency of maintenance, thereby extending the lifespan of equipment.

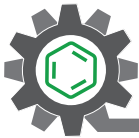
Enhancing fluid dynamics to minimize deposit formation includes improving the design of pipes and flow channels. By optimizing flow rates and turbulence, the industry can prevent particulate matter from settling by keeping it in suspension, thereby reducing the areas where deposits typically form.



Employing environmentally friendly chemicals as fouling inhibitors is another strategy. These chemicals prevent fouling materials from adhering to surfaces and are formulated to degrade naturally, reducing toxicity and preventing environmental damage.

Applying anti-fouling corrosion-resistant coatings directly to the interior surfaces of pipes and equipment serves to prevent both fouling and corrosion. These coatings create a barrier that minimizes direct contact between the metal surfaces and corrosive agents or fouling materials, thus extending equipment life and reducing downtime.

These advanced strategies not only aim to reduce the impact of fouling but also contribute to the sustainability and cost-effectiveness of operations in the oil and gas industry. A prime example of such innovation is **HEGGEL Corr 220 AF**, a high-tech coating renowned for its superior chemical and fouling resistance at elevated temperatures. This robust coating significantly extends equipment lifespan and reduces maintenance needs, enabling more reliable and efficient operations.



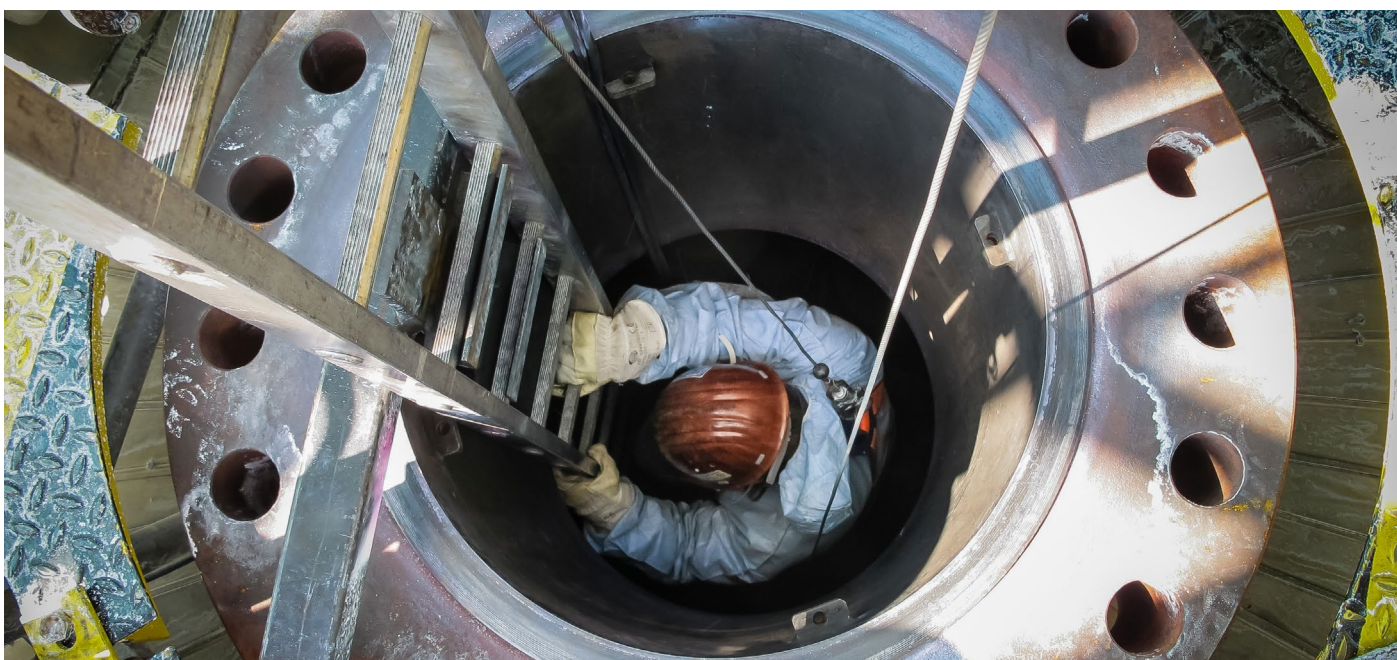
Advanced Anti-Fouling Chemical Resistant Coating

HEGSEL Corr 220 AF exemplifies the latest advancements in coating technology, leveraging advanced nano-technology and enhanced with sophisticated fillers. This innovative formulation endows it with exceptional anti-fouling properties, positioning it as an optimal solution for safeguarding industrial components.

Specifically engineered for environments exposed to highly aggressive chemicals, **HEGSEL Corr 220 AF** provides reliable protection against a wide range of agents, including concentrated organic and mineral acids, alkalis, and solvents. Its robust formulation delivers superior resistance to chemical degradation and fouling, even under elevated temperatures. This ensures both the longevity and reliability of equipment, significantly extending its service life.

Beyond its chemical resistance, **HEGSEL Corr 220 AF** is noted for its exceptional adhesion properties. Ideal for both steel and concrete surfaces, this strong adhesion forms a protective barrier that significantly enhances the durability of the underlying material. This is particularly valuable in large secondary containment areas that are frequently exposed to spills and harsh substances.

HEGSEL Corr 220 AF is a solvent-free coating, specifically designed to prevent fouling and sludge build-up, maintaining the cleanliness and efficiency of industrial equipment under various operational conditions. This feature is crucial for industries where equipment longevity and performance are critical.





The self-priming, single-coat application of **HEGSEL Corr 220 AF** not only simplifies the application process but also significantly reduces labor and material costs. This efficiency is especially advantageous for large-scale projects where effective time and resource management are crucial. Additionally, the coating is engineered to cure at ambient temperatures, facilitating a straightforward and energy-efficient application.

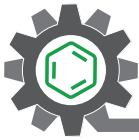
This feature eliminates the need for heating equipment, further reducing installation costs and energy consumption.

HEGSEL Corr 220 AF also boasts outstanding abrasion resistance, making it suitable for areas and machinery that undergoes frequent or intense use. This resistance ensures that the coating remains intact and effective, even under harsh operational conditions.



Application Areas

- ◆ Chemical storage tank/process vessel internal linings
- ◆ Internal pipe lining
- ◆ Secondary containment areas
- ◆ Road/sea chemical tankers
- ◆ Marine equipment
- ◆ Concrete walls/floors
- ◆ Heat exchangers and evaporators
- ◆ External coating for insulated pipes, operating at sub-ambient temperatures



Chemical Resistance

- Phosphoric acid 84%
- Nitric acid 50%
- Sodium hydroxide 50%
- Tetrahydrofuran
- Demineralised water
- Sodium hypochlorite 15%
- Phenol 100%
- Hydrazine
- MEK
- Carbon disulphide
- Sulphuric acid 98%
- Hydrochloric acid 37%
- Glacial acetic 100%
- Methylenechloride
- Seawater

Technical Data		Value	Unit
Abrasion Resistance ASTM D4060 (Taber CS-17/1kg/1000 cycles)		26	mg weight loss
Impact Resistance ASTM G14	Forward	10	Joules
	Reverse	3	
Adhesion Strength (Cohesive failure) ASTM D4541	Brush Grade	19.3	MPa
	Spray Grade	30.9	
Tensile Strength BS 6319: Part 7: 1985		40	MPa
Compressive Strength BS 6319: Part 2: 1983		120	MPa
Temperature Resistance NACE TM0174	Immersed	+130	°C
	Non-Immersed	+150	