



GeoTherm™ HT-2



Product Code # SOL-2410

Solutions for High Temperature Well Environments: Combining New Generation Wear Resistance With Superior Corrosion Protection For Steam Service

- ▶ Extreme barrier against corrosion and wear
- ▶ Continuous Operating Temperature 1000°F (537°C)
- ▶ Extremely hard surface finish with dry film lubricant
- ▶ Ideal for high temperature oilfield service and SAGD
- ▶ Suitable for steam, geothermal, and volcanic services
- ▶ PTFE sealer provides low friction coefficient
- ▶ Allows engineers a variety of metal substrates
- ▶ Thin coat application prevents undersize designs

GeoTherm HT-2™ is an ISO approved Military Specification (MIL-C-81751B) cermet (*ceramic*) base coat system designed for high temperature petrochemical service. Combined with a PTFE ceramic sealer, this 2-coat system provides an extremely hard dry-film lubricant with a low coefficient of friction. This coating (a part of the CORROLON family of industrial coatings) is designed to protect against coarse slurries erosion and abrasives wear in steam and "hot well" environmental conditions.

This coating permits engineers to specify protective enhancement without affecting critical tolerances in their designs. In addition, the new generation **GeoTherm HT-2™** system has proven itself as an exceptional coating in steam and geothermal conditions. Its complex ceramic matrix and burnishing density bond equally well to ferrous and non-ferrous materials, thereby enabling most industrial applications the flexibility to work in materials suited to their specific requirements.

Engineering Data & High Performance Characteristics:



GeoTherm HT-2™ is applied in a thin film process that evenly coats metal surfaces and ensures a completely uniform coating. Tested by Centrilift Hot Loop Test with Tidelines for geothermal project in Nevada, United States of America.

Temperature Specifications

GeoTherm HT-2™ operates very efficiently in extreme temperature environments. The inorganic ceramic matrix in this coating system enables it to perform in steam, geothermal and volcanic service. Coated parts exhibit hardness and low coefficient of friction properties, remaining versatile and in demanding industrial use.

Continuous Operating Temp 1000°F (537°C)
Intermittent Temperature 1200°F (650°C)

Engineered for SAGD (Steam Assist Gravity Drainage) and ES-SAGD service, this ceramic system is tooled for steam ESP applications.

Innovation and High-Performance Solutions



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Custom Global Coatings



GeoTherm HT-2™

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GEOTHERM HT-2		
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REVISION 1.7.1	ISO DATA SHEET #815-A-2	

Hardness

GeoTherm HT-2™ is almost twice as hard as the best organics and offers a tough barrier to extreme corrosion and wear environments. Due to its ceramic content, this system retains its hardness at shifting elevated temperatures.

Hardness rating (ASTM D 785) of Rockwell 65 (+-2.0) and Pencil Hardness 8H, even at elevated temperatures.

Thickness

GeoTherm HT-2™ provides an even application that enables protective enhancement without affecting critical engineering tolerances in designs. This coating system is uniform in thickness and ranges from 0.001" to 0.0015" (+-0.0002").

Wear Resistance

Pioneer to reduce wear in parts, **GeoTherm HT-2™** prevents asperities (metal surface peaks) from making physical contact. The coating acts as a cushion by spreading high point loads in bearings and reducing element fatigue. Another advantage of this coating is its ability to reduce "boundary lubrication failure", caused when equipment is frequently started and stopped; thereby allowing oil films to become too thin to function as a lubricant.

Lubricating Solids

GeoTherm HT-2™ contains a number of high pressure (EP) dry-film lubricating solids selected to increase the load-bearing capability and life of the primary coating while maintaining an extremely low coefficient of friction.

Military Specification

GeoTherm HT-2™ is approved on US Military Specifications MIL-C-81751B, "Coating Metallic - Ceramic," as a Type 1 Class 4 coating system.

Non-Stick (Release) Properties

Distinct from friction, release is the property of a metal surface that affects the ability of a substance to adhere to it. **GeoTherm HT-2™** is a new technology that combines ceramics with PTFE fluoropolymer resins to produce a unique, low friction surface finish of 0.06 with a dry-film lubricant.

This means that buildup of foreign particles (scale, asphaltines, gypsum, and the like) will be dramatically reduced on coated parts, resulting in minimal contamination and plugging. Mechanisms that require "fail-safe" operation under critical circumstances are greatly enhanced in security.

Corrosion Protection

GeoTherm HT-2™ resists organic and inorganic compound attacks by means of a burnished and dense ceramic barrier which is impregnated by a PTFE dry-film lubricant sealer. In environments where corrosion protection is important, process equipment and function-to-success parts are enhanced by reducing oxidization, galvanic corrosion, and increasing chemical resistance.

This system is extremely resistant to corrosive medium and combined with the PTFE sealer, the 1 to 1.5 mil (0.0254 to 0.0381 mm) combination provides a significant 4,000+ hours of protection



High Performance Applications

- ▶ SAGD and ES-SAGD Hot Well Components
- ▶ E.S.P. Stages
- ▶ Military Applications
- ▶ Valves
- ▶ Pipes & Tubing
- ▶ Nuts & Bolts
- ▶ Fasteners and Threaded Parts
- ▶ Mining Pumps
- ▶ Engine Components
- ▶ Gears & Springs
- ▶ Actuators
- ▶ Completion Systems and Fishing Tools
- ▶ Aerospace & Aeronautical
- ▶ Latch Couplings
- ▶ Burner Parts
- ▶ Offshore Platforms
- ▶ Hydraulic Pistons
- ▶ Fail-Safe Mechanisms



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