

SermaLon® Coating for Turbomachinery

The patented three-part SermaLon® coating system was developed primarily to provide anti-fouling and corrosion protection to driven compressor components and industrial gas turbine components exposed to wet chloride attack, as well as steam turbine components.

The SermaLon coating system consists of:

- An aluminum-filled chromate/phosphate bond coat
- An intermediate high-temperature polymeric inhibitive coating
- A PTFE-impregnated topcoat that provides a barrier against corrosion and excellent resistance to fouling

The coating system provides excellent protection to carbon and stainless steel substrates when exposed to hydrocarbons, corrosive steam conditions, sour gas or low pH wet chloride environments.

Advantages

The benefits of using SermaLon include:

- Smooth surface finish and PTFE-impregnated topcoat contribute to performance recovery and reduced fouling rate
- Superior resistance to acid rain, deicing fluids, decontamination fluids, hydraulic fluids, lube oils, and jet fuels.

- Excellent bond strength
- Continuous protection against relative humidity to 100 percent, and with continuous salt/mist in air
- Excellent coating ductility
- No hydrogen embrittlement problems
- High resistance to corrosion fatigue
- Excellent resistance to hydrocarbon fouling

Applications

SermaLon coating is designed to be used on ferrous substrates such as:

- Steam turbine components exposed to corrosive steam
- IGVs of industrial gas turbines



Centrifugal compressor rotor coated with SermaLon

- Centrifugal compressors exposed to sour gas, wet chlorides, or excessive fouling, especially by ethylene and other hydrocarbons

Physical Properties

Thickness	0.004 to 0.006 inches (100 to 150 μm)
Maximum Continuous Operating Temperature	500°F (260°C)
Peak Operating Temperature/Time	600°F (315°C)/1 hour
pH Operating Range	3 to 9

Performance Data (2 mil (50 μm) coating on 1010 steel)

Test	Results
Salt Spray (ASTM B117) On 410 stainless steel	> 3000 hours with no red rust
Adhesion (ASTM D3359)	5B, no pickoff, excellent
100% Humidity (ASTM D2247)	3000 hours—no effect
Surface Finish (On new machined external surfaces)	< 40 microinches R_a at 0.8 mm cutoff < 1.0 microns R_a at .030" cutoff