

Corrosion Under Insulation (CUI)



Thermaguard™ CUI 650 Coating (Inert Multi Polymeric Matrix Coating)

Thermaguard™ CUI 650 is a third-generation, pure inorganic single component, ambient curing polysiloxane coating formulated specifically to provide corrosion protection to under insulation environments where wet & dry cycling can occur. The coating conforms to the NACE SP0198-2010 classification, inert multi-polymeric matrix coatings for Corrosion Under Insulation (CUI) in both cryogenic & elevated temperature applications.

Through specific formulation technology Thermaguard™ CUI 650 can withstand temperatures from -196 to 650°C, fully curing at ambient conditions eliminating the need for heat curing prior to service. Thermaguard™ CUI 650 has exceptional resistance to thermal cycling, hot saline water immersion & chemical exposure throughout its operating temperature range.

Thermaguard™ CUI 650 can be used in both OEM (shop application) & maintenance work due to having surface tolerance to rusted steels which have been marginally prepared (St 2/3). Additionally, the product can be applied in service to hot equipment operating up to 260°C, removing the need for plant shut down periods.

Intended Applications

For applications where severe corrosive environments can occur such as salt water immersion Under Insulation & acid exposure in elevated temperatures. Such facilities include, petrochemical, chemical plants, offshore, power, refining, and generic processing; pipework, vessels, tanks, heat exchangers, stacks, chimneys, steam lines etc. operating within -196 to 650°C temperature range.

System Specifications

Thermaguard™ CUI 650 in a 2-coat application for CUI or exposed corrosion protection as a direct to metal (DTM) coating system.

Carbon or stainless steel ambient spray, brush or roller (10 to 50°C) application:

125 - 150µm DFT

Application of Thermaguard™ CUI 650 by airless or air spray are the preferred application methods when applied over Sa 2½ prepared carbon steel or abrasively swept stainless steel (Rz >30µm). New build applications should adopt a stripe coating method to ensure edges have adequate film build.

Maintenance application (St 2/3), brush & roller (10 to 50°C) application:

75 - 125µm DFT

At higher temperature applications, further coats may be necessary to build the film to a total 250 to 300µm DFT.

Thermaguard™ CUI 650 Coating

(Inert Multi Polymeric Matrix Coating)



Technical Information

Product chemistry:	A single component, ambient curing, pure inorganic polysiloxane. Conforms to the NACE SP0198-2010 classification of Inert Multi-Polymeric Matrix coatings.
Color:	Light Grey & Dark Grey
Specific gravity:	Approx. 1.91 g/ml
Theoretical spreading rate:	6.1m ² /l at 100µm DFT
Volume solids:	64% ± 2%
VOC :	Approx. 342g /L
Flashpoint (ISO 1523):	30°C
Auto ignition temperature:	450°C
Temperature resistance:	-196 °C to 650°C
Application methods:	Airless, air spray and brush & roller

Surface Preparation

Intended for insulated steel surfaces, both carbon & stainless. Substrates must be clean, dry and free from any contamination. All oil, dirt, grease, dust, foreign material, and loose rust must be removed prior to coating.

Insulated or exterior exposed carbon steel

Abrasive blast clean to Sa 2½ (ISO 8501-1:2007) or SSPC-SP10. The resulting surface profile (Rz) should be 30 - 50µm. All sharp edges & rough welds should be rounded off.

Thermaguard™ CUI 650 has surface tolerance to maintenance work applications where tight adhering or flash rusted steel surfaces are present & blasting is not possible. In such circumstances proceed with the following pretreatment; remove all loose adhering rust & rust scale and follow St 2/3 surface preparation prior to application.

Insulated or exterior exposed stainless steel

Abrasive sweep clean using a non-metallic & chloride free abrasive (aluminum oxide or garnet). The resulting surface profile (Rz) should be 30 - 50µm. All sharp edges & rough welds should be rounded off.

Substrate Temperature & Conditions

Ambient substrate temperature application should remain between 10 to 50°C and remain 3°C above the dew point and relative humidity should be 35 - 85% during application. For various temperature applications thinning is:

- Thermaguard™ X21; 10 to 60°C
- Thermaguard™ S100; 60 to 150°C
- Thermaguard™ S200; 150 to 260°C



Thermaguard™ CUI 650 Coating

(Inert Multi Polymeric Matrix Coating)

Application

Airless	Pump: 30:1 or higher, Tip size: 0.015 - 0.023 inch Pressure: 2321- 2901 psi/160 - 200 bar Thinning: Thermaguard™ X21, 10 to 60°C (2 - 5%) Thermaguard™ S100, 50 to 150°C (5 - 10%) Remove all mesh filters
Air spray (conventional)	Pressure: 30 psi / 2.1 bar Nozzle orifice: 1.8 - 2.2mm Thinning: Thermaguard™ X21, 10 to 60°C (4 - 8%) Thermaguard™ S100, 60 to 150°C (6 - 10%) Thermaguard™ S200, 150 to 260°C (8 - 12%)
Brush/roller	Thinning: Thermaguard™ S100, 60 to 150°C (0 - 10%) Thermaguard™ S200, 150 to 260°C (8 - 12%) For elevated temperature application, be sure that brush bristle and roller nap are tolerant of the substrate temperatures.
Mixing	Thermaguard™ CUI 650 is a single component product, settling can occur during transport & storage. The material should always be mixed using a mechanical agitation ensuring all settled-out pigments are dispersed until a uniform consistency is reached.
Reactivity	Thermaguard™ CUI 650 is reactive with moisture, skinning can occur once opened. To prevent skinning keep covered at all times.
Reducer	Thermaguard™ X21 (10 to 60°C application) Thermaguard™ S100 (60 to 150°C application) Thermaguard™ S200 (150 to 260°C application)
Clean up	Use Thermaguard™ X21 for cleaning after product use. Ensuring all material is flushed from application equipment.
Packaging	Single component material 5 liter can, 10.80 kg per can

Notes: Please see application guide for further instructions on product use.

Thermaguard™ CUI 650 Coating

(Inert Multi Polymeric Matrix Coating)



Coating & Curing Schedule

DFT	Theoretical spreading rate
50	12.6 m ² /l
150	4.2 m ² /l

Film thickness information

DFT/WFT	Minimum (µm)	Maximum (µm)
Dry film thickness	50	150
Wet film thickness	82	238

Drying & recoating information

Temperature (°C)	Touch dry	Overcoating time (min)	Dry to handle
10	6 hours	24 hours	36 hours
23	2 hours	6 to 8 hours	24 hours
38	1 hour	4 to 6 hours	16 hours
130	N/A	N/A	N/A

Notes: The drying times can vary upon different environmental conditions. The coating should be applied within the information supplied to ensure drying & overcoating times are not affected. The product is fully cured of ambient conditions & does **not** require heating to obtain mechanical & corrosion protection. Unlimited overcoat time even after exposure to elevated temperatures; consult Performance Polymers for surface preparation.

Additional Information

Safety precautions

This product is for use only by professional applicators in accordance with the information in this Technical Data Sheet (TDS) and the applicable Material Safety Data Sheet (MSDS). Refer to the product MSDS before using this material. All usage of this product must be kept in compliance with local, health, safety & environmental conditions & regulations.

Storage & shelf life

The material should be stored in a dry, shaded environment away from heat & ignition sources. Do not allow material to freeze. The shelf life is a minimum 12 months at 23°C.