
Product description

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

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.

Colour

Light Grey & Dark Grey

Specific gravity

Approx. 1.91 g/ml

Theoretical spreading rate

6.10 m²/l at 100µm DFT

Volume solids

64% ± 2%

VOC

Approx. 342 g/l

Flashpoint (ISO 1523)

30°C

Auto ignition temperature

450°C

Temperature resistance

-196 to 650°C

Application methods

Airless, airspray 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 (R_z) 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 (R_z) 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

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:

- Thermaguard™ CUI 650: 125 - 150µm DFT
- Thermaguard™ CUI 650: 125 - 150µm DFT

Application of Thermaguard™ CUI 650 by airless or airspray are the preferred application methods when applied over Sa 2½ prepared carbon steel or abrasively swept stainless steel ($R_z > 30\mu\text{m}$). 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:

- Thermaguard™ CUI 650: 75 - 125µm DFT
- Thermaguard™ CUI 650: 75 - 125µm DFT
- Thermaguard™ CUI 650: 75 - 125µm DFT

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

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.

Airspray (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

5 litre cans

Notes

Please see application guide for further instructions on product use.

Coating & curing schedule

Spreading rate information

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	Dry to handle
10	6 hours	24 hours	36 hours
23	2 hours	6-8 hours	24 hours
38	1 hour	4 -6 hours	16 hours
130	N/A	15 minutes	N/A

Notes: drying times can vary upon different environmental conditions. Coating should be applied within the information supplied to ensure drying & overcoating times are not affected. Product is fully cured from ambient conditions & does **not** require heating to obtain mechanical & corrosion protection. Unlimited overcoat time even after exposure to elevated temperatures.

Additional information

Safety precautions

This product is for use only by professional applicators in accordance with 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

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

Important

The information of the product displayed herein is to the best knowledge of Performance Polymers. All testing has been under strict laboratory conditions which Performance Polymers believes to be reliable; therefore, onsite performance can vary with application in different conditions. Additionally, Performance Polymers has no control of external factors e.g. substrate quality of preparation or any other factors which can hinder affect the performance of this product. The information in this TDS is not to be extensive; any use without confirmation from Performance Polymers is doing so at their own risk. Any deviation of performance on site isn't liable to Performance Polymers. The performance of this product carries no warranty. The documentation of this product should be thoroughly read before use.