Thermaguard™ TIP 350

Temperature Indicating Paint

Technical Data Sheet rev 03.21 (EN, EU)

Product description

Thermaguard™ TIP 350 is a single component, ambient curing polysiloxane topcoat which is thermally functional at temperatures above 300°C for hot spot identification in processing equipment. The coating will convert from green to white during temperatures 300°C and above, providing a safety feature to assets for hot spot identification. The product can be operated within cryogenic -196 to 650°C temperature range. The completely inorganic chemistry results in ultra-high performance regarding operating temperature & UV degradation.

The product can be applied over suitably primed steel surfaces such Thermaguard™ anti-corrosion coatings. Can be applied in service up to 150°C substrate temperatures, during maintenance applications.

Intended applications

Thermaguard™ TIP 350 such be used where safety recognition of equipment is necessary for identifying hot spots (above 300°C) in insulation or equipment failure. Should always be applied over primed steel with Thermaguard™ coatings or an approved Inorganic zinc (IOZ). Such applications include flares, stacks, values, tanks, chimneys, pipework, steam lines etc.

Technical information

Product chemistry
A single component, ambient curing, polysiloxane.

Colour
Green – <300°C
White – >300°C

Emissivity
ε 0.95

Specific gravity
1.60 g/ml

Theoretical spreading rate
13.0 m^2/l at 50µm DFT

Volume solids
65% ± 2%

VOC
Approx. 260 g/l

Flashpoint (ISO 1523)
30°C

Auto ignition temperature
500°C

Temperature resistance
-196 to 650°C

Application methods
Airless, airspray and brush & roller

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Surface preparation

Intended for primed 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.

Primed carbon steel

Thermaguard™ CUI 650; 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. Followed by application of Thermaguard™ TIP 350 in accordance with the technical specification.

Primed stainless steel

Thermaguard™ CUI 650; 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. Followed by application of Thermaguard™ TIP 350 in accordance with the technical specification.

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 rates are:

- Thermaguard™ X21; 10 to 60°C (0 - 10%)
- Thermaguard™ S100; 60 to 150°C (5 - 10%)

System specifications

Thermaguard™ TIP 350 in a single coat application for a functional finish.

Primed carbon or stainless steel, ambient spray (10 to 50°C) OEM, shop application:

- Thermaguard™ CUI 650: 125 - 150µm DFT
- Thermaguard™ CUI 650: 120 - 150µm DFT
- Thermaguard™ TIP 350: 50 - 75µm DFT

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Application of Thermaguard™ TIP 350 by airless or airspray are the preferred application methods for OEM (shop applied work).

Maintenance application, brush & roller (10 to 50°C) application:

- Thermaguard™ CUI 650: 100 - 125µm DFT
- Thermaguard™ CUI 650: 100 - 125µm DFT
- Thermaguard™ TIP 350: 50 - 75µm DFT

At higher temperature applications further coats maybe necessary to build the film to a total of 100 - 250µm DFT.

Application

Airless
Pump: 30:1 or higher

Tip size: 0.015 - 0.017 inch

Pressure: 2321 - 2901 psi / 160 - 200 bar

Thinning:
Thermaguard™ X21, 10 to 60°C, (0 - 3%)
Thermaguard™ S100, 50 to 150°C, (0 - 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, (0 - 3%)
Thermaguard™ S100, 60 to 150°C, (0 - 10%)

Brush/roller
Thinning:
Thermaguard™ S100, 60 to 150°C (0 - 10%)

Mixing
Thermaguard™ TIP 350 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™ TIP 350 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)

Clean up
Use Thermaguard™ X21 for cleaning after product use. Ensuring all material is flushed from application equipment.

Packaging
5 & 20 litres

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Coating & curing schedule

Spreading rate information

DFT	*Theoretical spreading rate*
50	13.0 m^2/l
75	8.67 m^2/l

Film thickness information

DFT/WFT	Minimum (µm)	Maximum (µm)
Dry film thickness	*50*	*75*
Wet film thickness	*77*	*115*

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.

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