

## Selection & Specification Data

<b>Generic Type</b>	Inorganic polymer (inert multi-polymeric matrix)
<b>Description</b>	A high performance coating which has outstanding resistance to wet/dry cycling conditions at elevated temperatures. Film is internally reinforced with a combination of aluminum and micaceous iron oxide (MiO) flake for superior barrier and thermal shock resistance. While it is typically used to protect steel substrates under insulation operating up to 1200°F/649°C, it can also be used on non-insulated steel surfaces. It can handle cryogenic exposures and will air dry at ambient conditions. It has excellent chemical resistant properties to handle the corrosive effects of wet insulation under thermal cycling conditions. This product is recommended for CS-6 and SS-5 systems of NACE SP0198 Standard Practice for coatings to control corrosion under insulation (CU).
<b>Features</b>	<ul style="list-style-type: none"> <li>• Prevents corrosion under insulation</li> <li>• Aluminum and MiO reinforced inorganic film</li> <li>• Continuous temperature resistance to 1200°F(649°C)</li> <li>• Very good flexibility</li> <li>• Outstanding resistance to wet/dry thermal cycling</li> <li>• Prevents stress corrosion cracking of stainless steels</li> <li>• Does not require heat cure for corrosion resistance</li> <li>• Self-priming; single component</li> </ul>
<b>Color</b>	Grey (0700) only
<b>Finish</b>	Eggshell
<b>Dry Film Thickness</b>	3.5 - 5.0 mils (89 - 127 microns) per coat
	Two coats are recommended for optimal performance.
<b>Solids Content</b>	By Volume 53% +/- 2%
<b>Theoretical Coverage Rate</b>	850 ft <sup>2</sup> at 1 mil (21 m <sup>2</sup> /l at 25 microns) 243 ft <sup>2</sup> at 4 mils (6 m <sup>2</sup> /l at 88 microns) 170 ft <sup>2</sup> at 5 mils (4 m <sup>2</sup> /l at 125 microns)
	Allow for loss in mixing and application.
<b>VOC Values</b>	As Supplied 3.39 lbs/gal (407 g/l)
<b>Maximum Service Temperature</b>	This product will handle thermal cycling from cryogenic of -321F(-196C) to high heat of 1200F(649C).

## Substrates & Surface Preparation

<b>General</b>	All surfaces must be thoroughly cleaned to remove dirt, grease, mill scale, loose rust and any other contaminants that can reduce adhesion via SSPC-SP1 solvent cleaning along with the recommended surface preparation as referenced below.
<b>Ferrous Metal</b>	For optimum performance, abrasive blast to SSPC-SP10 (NACE No.2) to obtain a 2.5-3.5 mil (60-90 microns) blast profile. Where blasting is impractical or not permitted use hand power tools to prepare surface to SSPC-SP11 or SSPC-SP15 to obtain a 1-2 mil profile (25-50 microns). A better cleaning method will improve performance and service life.
<b>Stainless Steel</b>	Surface profile should be a dense angular 1-3 mils and is best achieved through abrasive blasting. Remove all contaminants that would interfere with the performance of stainless steel for the intended service such as, but not limited to, imbedded iron or chlorides.

## Mixing & Thinning

<b>Mixing</b>	Power mix to uniformity.
<b>Thinning</b>	Normally not required for spray application. For brush or roller thin up to 10% by volume with Thinner #10. Consult Carboline for application over hot substrates. Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and will void product warranty whether express or implied.

## Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Spray Application (General)</b>	The following spray equipment has been found suitable and is available from WIWA® or other equipment manufacturers.
<b>Conventional Spray</b>	Pressure pot equipped with dual regulators, 3/8" ID minimum material hose, 0.070" fluid tip with appropriate air cap. Adjust air pressure to provide uniform spray pattern.
<b>Airless Spray</b>	Pump Ratio: 32:1 (min)* Volume Output: 2.5 gpm (11.5 lpm)(min) Material Hose: 1/2" ID (12.5 mm)(min) Tip Size: 0.017-0.021" (0.043-0.053 mm) Output PSI: 1500-2000 (105-140 kg/cm2)  *PTFE packings are recommended and available from the pump manufacturer.
<b>Brush &amp; Roller (General)</b>	Use a natural bristle brush applying in full strokes. Avoid rebrushing. If rolled, use a short nap roller with solvent resistant core. Avoid rerolling. Appearance will vary using brush or roller application methods due to the orientation of the aluminum flake.

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# Thermaline® 4001

## Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	55 °F (13 °C)	50 °F (10 °C)	45 °F (7 °C)	0%
Maximum	90 °F (32 °C)	500 °F (260 °C)	100 °F (38 °C)	95%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

## Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Recoat
50 °F (10 °C)	12 Hours
60 °F (16 °C)	6 Hours
75 °F (24 °C)	2 Hours
90 °F (32 °C)	1 Hours

These times are based on the recommended dry film thicknesses. Excessive film thickness or inadequate ventilating conditions after application require longer dry times and will cause premature failure in extreme cases. **Note:** To maximize performance, avoid rapid temperature excursion for the first heat cycle; particularly early in the cure. A gentle heat rise through 500°F is preferred. At elevated service temperatures film will harden, yet still provide protection.

## Cleanup & Safety

- Cleanup** Use Thinner #2 or Acetone.
- Ventilation** When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.
- Caution** This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

## Packaging, Handling & Storage

- Shelf Life** 12 months at 75°F(24°C)
- Shipping Weight (Approximate)** 1 Gallon Kit - 12 lbs (5.4 kg)  
5 Gallon Kit - 65 lbs (29.5 kg)
- Storage Temperature & Humidity** 40°-120°F(4°-49°C)  
0-95% Relative Humidity
- Flash Point (Setaflash)** 80°F(2.7°C)
- Storage** Store indoors



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