product data carboline®

Thermaline® 4000

Selection & Specification Data

Generic Type
Inorganic silicate

Description
Thermaline 4000 is a high heat polymer coating used for the protection of equipment operating at elevated temperatures. It is typically used over Carbozinc® inorganic zinc primers for outstanding corrosion protection and heat resistance. The combination of the zinc primer with this finish provides exceptional performance in durability. Unlike most high temperature silicone-based technologies with soft films, Thermaline 4000 does not require a heat cure for film forming properties. It cures hard rapidly under ambient conditions (humidity greater than 30%).

Features
- Inorganic; stable; inert polymer
- Outstanding durability
- Excellent corrosion protection (used over Carbozinc inorganic primers)
- High temperature resistance (800°F/426°C)
- VOC compliant
- Cures at ambient conditions (hard in 2 hours)
- Cures down to 40°F
- Does not require heat cure for high-temp service
- Outstanding resistance to handling damage
- Single-package

Color
White (A826), Black (C900), Lt. Gray (F703). Other custom colors are made to order.

Finish
Flat

Primer
Must be used over inorganic zinc primers.

Dry Film Thickness
3.0 - 5.0 mils (76 - 127 microns) per coat

Not to exceed 7 mils (175 microns)

Solids Content
By Volume 57% +/- 2%

Theoretical Coverage Rate
914 ft^2 at 1.0 mils (22.4 m^2/l at 25 microns)
305 ft^2 at 3.0 mils (7.5 m^2/l at 75 microns)
183 ft^2 at 5.0 mils (4.5 m^2/l at 125 microns)

Allow for loss in mixing and application.

VOC Values
Thinner 254 12 oz/gal 3.43 lbs/gal 410 g/l
Thinner 33 6 oz/gal: 3.21 lbs/gal (385 g/l)
As Supplied 3.0 lbs/gal (360 g/l) mixed

Dry Temp. Resistance
Continuous: 800 °F (427 °C)
Non-Continuous: 1000 °F (538 °C)

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Refer to specific primer's Product Data Sheet for detailed requirements of the specified primer.

Steel
Minimum: SSPC-SP6 for zinc primer application
Surface Profile: 1.0-3.0 mils (25-75 micron)
Apply over properly applied and clean inorganic zinc primers. When used over Carbozinc 11 Series primers allow a minimum 2-hour cure on primer prior to topcoating.

Galvanized Steel
Not recommended.

Stainless Steel
Not recommended.

Mixing & Thinning

Mixing
Power mix to a uniform consistency.

Thinning
May be thinned up to 5% by volume with Carboline Thinner #33 for most applications or 5-10% with Thinner #254 for hot (85°F/29°C) or windy conditions.

Pot Life
Indefinite. Avoid moisture contamination.

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.

Conventional Spray
Conventional pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, and 0.043" to 0.070" I.D. fluid tip and appropriate air cap.

Airless Spray
Pump Ratio: 30:1 (min.)
Volume Output: 2.5 gpm min. - 11.5 l/min min.
Material Hose: 3/8" I.D. min. - 9.0 mm min.
Tip Size: 0.017-0.021" - 0.43-0.53mm
Output Pressure: 2100-2500 psi - 135-170kg/cm^2

Brush
For touch up use only. Use medium bristle brush and avoid re-brushing. Two coats may be required to obtain desired thickness and appearance. For best results tie-in within 5 min.

Spray Application (General)
The following spray equipment has been found suitable and is available from manufacturers.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	40 °F (4 °C)	40 °F (4 °C)	40 °F (4 °C)	30%
Maximum	90 °F (32 °C)	110 °F (43 °C)	110 °F (43 °C)	95%

Industry standards are for substrate temperatures during application to be 5°F (3°C) above the dew point. This product does not require heat-curing; but it does require moisture to complete its final cure. Use water mist if humidity is below minimums.

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Thermaline® 4000

Curing Schedule

Surface Temp. & 50% Relative Humidity	Cure for Service	Dry to Handle	Touch Dry
75 °F (24 °C)	18 Hours	2 Hours	15.0 Minutes
75 °F (24 °C)	24 Hours	NR	NR

These times are based on recommended coverage rates. Curing under low humidity conditions will extend times. Final cure will depend on humidity levels; but generally overnight cure (18-24 hours) is sufficient prior to placing in high-heat service.

Cleanup & Safety

Cleanup Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

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.

Packaging, Handling & Storage

Shelf Life 6 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate) 1 Gallon Kit - 13 lbs (kg)
5 Gallon Kit - 65 lbs (kg)

Storage Temperature & Humidity 40 -90° (4°C-32°C)
0-90% Relative Humidity

Flash Point (Setaflash) Thermaline 4000: 61°F (19°C)
Thinner 33: 75°F (24°C)
Thinner 2: 23°F (-5°C)

Storage Store Indoors. KEEP DRY

carboline®
Coatings - Linings - Fireproofing