Carbotherm® 3300

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Waterborne Acrylic
Description	Carbotherm 3300 is a ceramic blend insulative composite coating formulated in a high temperature resistant acrylic binder. It is ideally suited as a protective heat barrier to shield personnel from hot surfaces. It also inhibits heat transfer into or out of a structure. Its insulative properties keeps structures exposed to solar radiation significantly cooler. It can be used to minimize or eliminate sweating of pipes or other operating equipment.
Features	• Excellent thin-film insulation • Unique formula provides superior coverage during application • Protects personnel from hot surfaces • Multi-purpose interior/exterior coating • Insulation provides anti-condensation properties • Easy to use • Zero VOC; Low odor • May be applied to hot surfaces
Finish	Eggshell
Primer	For service temperatures: **Up to 235°F/112°C:** Use Carbocrylic 3358 Series; Carboguard 553 or Carboguard 890 **Up to 300°F/149°C:** Use Carbozinc 11 Series; Carboguard 690 or Carbomastic 15 Series **Up to 350°F/176°C:** Use Carbozinc 859 Series
Service Temperature	-60° to 350°F (-51° to 176°C) For initial service avoid sudden temperature "surges". Do not exceed 200°F/93°C during the first hour.
Dry Film Thickness	16 - 25 mils (406 - 635 microns) per coat Number of coats depends on the operating temperature and degree of insulation or protection needed. Contact your local Carboline Representative for a copy of **Carbotherm 3300 User's Guide** for thickness needs based on end use.
Solids Content	By Volume 90% +/- 2% Tested in accordance with ASTM D2697
Theoretical Coverage Rate	1444 ft²/gal at 1.0 mils (35.4 m²/l at 25 microns) 90 ft²/gal at 16.0 mils (2.2 m²/l at 400 microns) 58 ft²/gal at 25.0 mils (1.4 m²/l at 625 microns) Allow for loss in mixing and application.
VOC Values	As Supplied 0.00
Topcoats	May be topcoated with acrylics for custom colors or gloss. For custom colors or for high humidity/wet exposures use Carbocrylic 3350 or Carbocrylic 3359 Series.

SUBSTRATES & SURFACE PREPARATION

General	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil, and all other contaminants that could intefere with adhesion of the coating.
Steel	Prime with appropriate primers as recommended in section on "Primers".
Stainless Steel	Abrasive blast to a 1-1.5 mil profile and apply appropriate primer (See Primers).

PERFORMANCE DATA

Test Method	System	Results
Accelerated Aging/Salt Fog (ASTM B117)	Carbozinc 859/Carbotherm 3300/Carbocrylic 3359 DTM	2016 hrs; No blisters or rust on the plane or scribe; Few to medium #2 blisters at scribe.
Cyclic QUV-A/Prohesion (ASTM D5894)	Carbozinc 859/Carbotherm 3300/Carbocrylic 3359	2016 hrs; No effect, No blisters or rust on plane or scribe
Elongation (ASTM D638)	Carbotherm 3300	25%
Emissivity (ASTM E408)	Carbotherm 3300	0.88
Flame Spread (ASTM E84)	Carbotherm 3300	Flame Spread: 0 Smoke Development: 0
Humidity Cabinet (ASTM D2247)	Carbozinc 859/Carbotherm 3300/Carbocrylic 3359 DTM	2016 hrs; No effect, No blister or rust on plane or scribe
R Value	Carbotherm 3300 (tested at 0.172")	0.251 hr-ft2-°F/BTU
Solar Reflectivity (ASTM E903)	Carbotherm 3300	86.2
Thermal Conductivity @77°F/24°C; (ASTM C177)	Carbotherm 3300 (tested at 0.172")	0.0570 BTU/hr-ft-°F (0.0987 W/m-°K)
Thermal Transmittance @77°F (ASTM C177)	Carbotherm 3300 (tested at 0.172")	3.98 BTU/hr-ft2-°F

MIXING & THINNING

Mixing	Separation of coating may occur and is common. Turning containers upside down for 5 minutes just prior to mixing will dramatically facilitate mixing. Use a drywall compound mixing paddle (in reverse) to incorporate material to a homogeneous consistency resembling a milkshake. Normally this will take several minutes. Avoid contact of mixing blade and edge of plastic buckets to avoid shearing plastic pieces into coating. If other types of blades or high powered mixers are used, avoid high shear or over mixing.
Thinning	No thinning is required.

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.

Spray Application (General)	Pre-rinse (and lubricate) equipment with undiluted Carboline Surface Cleaner 3 followed by clean potable water before spraying. The following spray equipment has been found suitable and is available from equipment manufacturers.
Conventional Spray	Bottom outlet pressure pot works best, equipped with dual regulators, ½" I.D. minimum material hose, 0.070" I.D. fluid tip and appropriate air cap. Adjust line air pressure to 40 psi and pot pressure to 15 psi.

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Airless Spray	Pump Ratio: 30:1 (min.)* GPM Output: 3.0 (min.) Material Hose: 3/8” I.D. (min.) Tip Size: .021-.025”** Output PSI: 1800-2200 Filter Size: Remove filters *PTFE packings are recommended and available from the pump manufacturer. Use of a surge protector is strongly recommended. **Use heavy duty reverse-a-clean non-diffuser tips.
Brush & Roller (General)	Multiple coats may be required to achieve recommended dry film thickness. Brushing may negatively affect insulative properties; use for touch up of small areas only. Avoid excessive re-brushing. Do not apply by roller.
Brush	Use a synthetic bristle brush. Use for touch up of small surface areas only.
Roller	Not recommended

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	100°F (38°C)	300°F (149°C)	110°F (43°C)	80%

It is best to spray apply a light 5-10 mil coat and allow to tack dry prior to full coating. This is especially helpful over hot surfaces which may require 2-4 light passes between 150-300°F (65-150°C).
Do not apply when the surface temperature is less than 5°F (3°C) above the dew point. Do not apply if temperatures are expected to drop below 50°F (10°C) within 24 hours of application. Special application techniques may be required above or below normal application conditions. Dry times will be aided by higher temperatures, lower humidity, hotter substrates, and more air movement during application and curing.

CURING SCHEDULE

Surface Temp.	Dry to Recoat
60°F (16°C)	6 Hours
75°F (24°C)	3 Hours
90°F (32°C)	1.5 Hours

These times are based on a 20 mil (500 micron) dry film thickness. Higher film thicknesses, insufficient ventilation, high humidity or cooler temperatures will require longer cure times. The material is typically ready to recoat when it passes a "dry to handle" test (thumb twist test). If a final color coat (see Topcoats) is used; allow 36-48 hours dry time to ensure complete dryness prior to final color coat.

CLEANUP & SAFETY

Cleanup	Use clean potable water followed with suitable solvent to dry equipment. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

CLEANUP & SAFETY

Safety	Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Use adequate ventilation and wear gloves or use protective cream on face and hands if hypersensitive. Keep container closed when not in use.

PACKAGING, HANDLING & STORAGE

Shelf Life	24 months at 75°F (24°C)
Storage Temperature & Humidity	40° -100°F (4°-43°C) 0-95% Relative Humidity
Storage	Store indoors (Keep from freezing)
Shipping Weight (Approximate)	4 Gallons 27 lbs (12 kg)
Flash Point (Setaflash)	>200°F (93°C)

WARRANTY

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