Carbotherm® 730

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	A two component, 100% solids epoxy syntactic insulative coating.
Description	An insulative coating designed to provide cryogenic protection for structural steel, vessels, piping and ductwork operating at temperatures between -40°F (-40°C) and 175°F (79°C). This product can be utilized as a base coat with Carboline fireproofing materials to provide combined insulation and fire protection to substrates exposed to a cryogenic spill followed by a hydrocarbon fire.
Features	• Provides total submersion and splash and spill cryogenic protection • Resistant to moisture and chemical exposure • Excellent spray properties • Can be applied by plural component airless spray, trowel or casting • High film build
Color	Grey
Finish	Textured
Primer	Must be applied over a compatible primer. If the steel has already been coated with an existing primer, refer to Carboline Technical Service for advice before application. Contact Carboline Technical Service for a complete list of approved primers. The thickness range for primers used under Carbotherm® 730 must be 3-5 mils (75-125 microns) DFT per SSPC-PA2.
Film Build	160-250 mils (4-6 mm)
Solids Content	By Volume 100%
VOC Values	**As Supplied** : 0.02 lbs/gal (3 g/l)
Topcoats	The choice of topcoat will depend on project requirements. For options contact Carboline Technical Service.

SUBSTRATES & SURFACE PREPARATION

General	Remove all oil or grease from the surface to be coated using Thinner #2 or Carboline Surface Cleaner #3.
Steel	SSPC-SP6/NACE 3, Sa2 (ISO 8501-1:2007). 1.5-2.0 mil (37-50 micron) angular profile is required. Prime with a Carboline approved primer as recommended.
Galvanized Steel	Steel preparation before priming should meet SSPC-SP7. 1.5-2.0 mil (37-50 micron) angular profile required. Prime with Carboline approved primer. Contact Carboline Technical Service for recommendations.

PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	System	Results
ASTM C177 Thermal Conductivity @ 248°F	Carbotherm 730	0.108 BTU/hr-ft-°F (0.187 W/m-°K)
ASTM C177 Thermal Conductivity @ 90°F	Carbotherm 730	0.103 BTU/hr-ft-°F (0.178 W/m-°K)
ASTM D2240 Hardness	Carbotherm 730	Shore D - 37
ASTM D4541 Bond Strength	Carbotherm 730	500 psi (3.4 MPa)(cohesive break)
ASTM D638 Tensile Strength	Carbotherm 730	1,044 psi (7.2 MPa)(2.8% elongation)
ASTM D695 Compressive Strength	Carbotherm 730	1,064 psi (7.3 MPa)
ASTM D790 Flexural Strength	Carbotherm 730	1,112 psi (7.6 MPa)
ASTM D790 Modulus of Elasticity	Carbotherm 730	28,978 psi (200 MPa)
ASTM E1269-11 Specific Heat	Carbotherm 730	1,088 J/(kg·K) @ 23°C (73°F)
ASTM E84 Surface Burning	Carbotherm 730/Thermo-Lag 3000-P	Flame Spread: 10 Smoke Development: 30
R Value	Carbotherm 730 @ 1.0" (25.4 mm)	0.806 hr-ft2-°F/BTU

*All values derived under controlled laboratory conditions.

MIXING & THINNING

Mixer | Use 1/2" electric or air driven drill with a slotted paddle mixer (300 rpm under load).

Mixing | Material must be preheated to a minimum of 70°F (21°C). Both components must be premixed separately before introduction into the plural equipment. For trowel application, both components must be premixed separately before combining together. Always mix full kits. Once mixed, material must be applied within stated pot life.

Thinning | Do not thin.

Ratio | 1:1

Pot Life | Trowel: 15 minutes
Spray: Use plural component equipment for spray applications

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.

General | Use only plural component equipment specifically designed for epoxy based PFP.

Pump | WIWA® Duomix 333 or equivalent

Spray Gun | WIWA® 500 PFP or equivalent

Gun Swivel | 5,000 psi (1/2"-3/8")

Spray Tips | 0.035" - 0.045" (Use heavy duty RAC non diffuser tips and housing)

Fan Size | 6"-10" (depending on section being sprayed).

Static Mixer | Standard Static 12 turn (3/4" I.D.)

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.

Material Hose	100' heated hose bundle (3/4" I.D. minimum) with 3/4" mixer manifold
Whip Hose	20' (1/2" I.D. minimum)
Compressor	Be certain that the air supply is a minimum of 185 cfm @ 100 psi (6.9 kPa). Air volume and pressure required will depend on equipment used. Note: WIWA® is a registered trademark of the Wilhelm Wagner GmbH & Co. KG

APPLICATION PROCEDURES

General	Preheat material to a minimum of 70°F (21°C) prior to introduction into plural component equipment. Perform at least two ratio checks per day and after any equipment maintenance. Apply first coat at 160-250 mils (4-6 mm). Allow material to gel before backrolling with solvent resistant rollers (if necessary). Use Thinner #19 to mist down rollers to prevent them from sticking to the material. Allow material to cure for approximately 2 hours between coats (depending upon temperature). Continue building material at 160-250 mils (4-6 mm) per coat to specified thickness. Back roll material after each coat to improve finish and level surface. Contact Carboline Technical Service for more detailed information.
Application Rates	At an ambient temperature of 70°F (21°C), the following application rates are applicable: 160-250 mils (4-6 mm) per coat (wet) 2 hour recoat time between coats
Wet Film Thickness	Frequent thickness measurements with a wet film gauge are recommended during the application process to ensure uniform thickness.
Dry Film Thickness	For recommended methods of thickness determination and tolerances refer to: AWCI Technical Manual 12-B (Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire Resistive Materials).

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	70°F (21°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	100°F (38°C)	120°F (49°C)	110°F (43°C)	85%

Air and substrate temperature must be at least 50°F (5°C). Steel surface temperature should be a minimum of 5°F (3°C) above the dew point. The maximum humidity is 85%. Area must be protected from rain or running water during application until material is cured and topcoated.

CURING SCHEDULE

Surface Temp.	Handle	Recoat	Topcoat	Touch
75°F (24°C)	24 Hours	2 Hours	24 Hours	2 Hours

Curing times are dependent upon temperature, air movement and humidity. For optimum curing at 75°F (24°C), it is recommended to apply coats at 160-250 mils (4-6 mm) wet per coat. Material can be heated to achieve a quicker recoating and curing schedule.

TESTING / CERTIFICATION / LISTING

General	Tested in accordance to “Specification for Cryogenic Protection and Passive Fire Protection of Structural Members", dated March 2006 from South Hook LNG Terminal Company Ltd. All testing has been witnessed by Underwriter's Laboratories.

CLEANUP & SAFETY

Cleanup	Flush static mixer, whip hose, gun and tips with hot water or Thinner #19 (depending on pump set up) immediately after each use. Static mixer, gun, tip assembly and tools should be hand cleaned with Thinner #19.
Safety	Follow all safety precautions and personal protective measures stated on the Material Safety Data Sheet.
Overspray	All adjacent and finished surfaces shall be protected from damage and overspray.
Ventilation	In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material is cured.

MAINTENANCE

General	If coating becomes damaged, rebuild required thickness by spray or trowel. Damaged areas must be abraded back to a firm edge by sanding or scraping. The topcoat should be abraded back by 1" (25.4 mm) from the damaged area. The surface must be clean and dry before re-applying. The coating shall then be built back to the original thickness. Allow to cure and then overcoat with the specified topcoat or system.

PACKAGING, HANDLING & STORAGE

Packaging	Full Kits: 10 gallons (37.8 liters)
Shelf Life	9 months Shelf life when kept at recommended storage conditions and in original unopened containers.
Storage	Store indoors in a dry environment between 32°F - 100°F (0°C - 38°C).
Shipping Weight (Approximate)	6 lbs. (2.7 kg) per gallon (3.7 liters)
Flash Point (Setaflash)	Part A: >200°F (>93°C) Part B: >200°F (>93°C)

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.