

SELECTION & SPECIFICATION DATA

Generic Type	A two component, 100% solids epoxy intumescent fireproofing.
Description	An epoxy intumescent fireproofing for commercial and light industrial applications. It was specifically designed with an advanced formulation to provide 1-3 hour cellulosic fire protection for structural steel beams, I-section columns, tubular columns and pipes without the need for reinforcing mesh. It provides a fast curing, aesthetically pleasing fire protection solution and is rated for both exterior and interior applications.
Features	<ul style="list-style-type: none"> • Certified to UL 263 / ASTM E119 / NFPA 251 • Exterior and interior rated • High quality aesthetic finish • Does not require reinforcing mesh • Low thickness requirements • High build, fast recoat • Saves application time, lowering installation cost • Rugged durable material suitable for onsite or offsite applications • LEED compliant, low VOC • Low outgassing properties for clean room environments
Color	Grey
Finish	Slightly Textured
Primer	<p>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 applying. Contact Carboline Technical Service for a complete list of approved primers.</p> <p>Carboline approved primers must be sufficiently cured prior to application of Thermo-Lag E100. The general requirement for epoxy primers is a 24 hour cure. Material must be applied after 24 hours and not to exceed the approved primer's maximum recoat window.</p>
Film Build	60-200 mils (1.5-5 mm)
Solids Content	By Volume 100%
Theoretical Coverage Rates	1604 ft ² at 1 mil (149 m ² at 25 microns)
VOC Values	As Supplied : 0.11 lbs/gal (13 g/l)
Limitations	Not recommended for steelwork subject to long-term surface temperatures over 175°F (79°C) in normal use.
Topcoats	For interior conditioned space, topcoats are optional. For interior general purpose and exterior use, Carboline approved topcoats are required. Product must be applied to the specified DFT prior to applying a topcoat. The choice of topcoat will depend on project requirements. Contact Carboline Technical Service for a complete list of approved topcoats.

SUBSTRATES & SURFACE PREPARATION

General	Remove all oil or grease from the surface to be coated using Thinner #2 or Carboline Surface Cleaner #3.
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SUBSTRATES & SURFACE PREPARATION

Steel	The general requirement for steel preparation before the application of an approved primer should meet SSPC-SP6, with a 1.5-2.0 mil (37-50 micron) angular profile. Contact Carboline Technical Service for recommendations and specific primer requirements.
Galvanized Steel	The general requirement for 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.
Non-Ferrous Metals	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 D2240 Hardness	Thermo-Lag E100	> 40 Shore D
ASTM D256 Impact Resistance	Thermo-Lag E100	0.75 ft*lbs/in
ASTM D4541 Bond Strength	Thermo-Lag E100	> 1,200 psi (> 8.2 MPa) ¹
ASTM D695 Compressive Strength	Thermo-Lag E100	> 2,330 psi (> 16.0 MPa)
ASTM D790 Flexural Strength	Thermo-Lag E100	> 1,220 psi (> 8.4 MPa)
ASTM E84 Surface Burning	Thermo-Lag E100	Class A

All values derived under controlled laboratory conditions.

¹ Typical value. Recommended field minimum value is > 300 psi (> 2.0 MPa)

MIXING & THINNING

Mixer	Use 1/2" electric or air driven drill with a slotted paddle mixer. Must be 300 rpm under load (minimum).
Mixing	<p>Plural Component Application: For plural component applications, the part A and part B components must be pre-mixed separately before introduction into the plural equipment.</p> <p>Trowel Application: Recommended for small areas only. The product is supplied in 9 gallon (34.0 liter) kits. The product must be mixed in equal volumes of part A and part B. It is recommended to split each kit in half and mix 2.25 gallons (8.5 liters) of part A and 2.25 gallons (8.5 liters) of part B to achieve a maximum mixing volume of 4.5 gallons (17.0 liters). Add up to 1 quart (1 liter) of Carboline Plasite Thinner #19, Thinner #242E or Carboline approved equivalent to part B and mix until fully incorporated. Thinning is not required for this application and material should only be thinned as necessary to achieve the desired working time and consistency. Stage material by adding part B on top of part A. Material can be left staged for entire days' production (8 hours), but not overnight. Mix staged material with slotted paddle mixing blade for approximately 2 minutes or until completely blended and consistent color is achieved. Once mixed, material should be immediately poured out of mass onto a clean table or flat working surface to extend the pot life. Mixed material left in the pail will begin to exotherm and diminish pot life. Trowel application should commence immediately after mixing.</p>
Thinning	<p>Plural Component Application: Do not thin</p> <p>Trowel Application: Only thin as required with Plasite Thinner #19, Thinner #242E or Carboline approved equivalent – Maximum 1 quart (1 liter) per 4.5 gallon (17.0 liter) kit.</p>

MIXING & THINNING

Ratio	1:1
Working Time	30 - 45 minutes @ 75°F (25°C) 15 - 20 minutes @ 100°F (38°C)

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	Thermo-Lag E100 is applied by plural component application. Use only plural component equipment specifically designed for epoxy based PFP. Consult the manufacturers for specific information: AirTech Spray Systems (Houston, TX) Spray Quip (Houston, TX) Graco (Minneapolis, MN) WIWA (Alger, OH/Lahnau, Germany)
Pump	Plural Component: Graco® XM PFP WIWA® Duomix 333 or Carboline approved equivalent Contact the equipment manufacturers for specific models.
Spray Gun	WIWA 500 PFP, Binks 1M Mastic or equivalent Must have non-wetted spring assembly.
Gun Swivel	5,000 psi (34.4 MPa) 1/2" - 3/8" (12.7 mm - 9.5 mm)
Spray Tips	0.027" - 0.035" (Use heavy duty RAC non diffuser tips and housing)
Fan Size	6" - 10" (152 mm - 254 mm) depending on section being sprayed
Static Mixer	Standard Static 12 turn 3/4" (19 mm) I.D.
Material Hose	Plural Component: 100' (30.4 m) heated hose bundle with 3/4" (19 mm) I.D. minimum and 3/4" (19 mm) mixer manifold
Whip Hose	20' (6.1 m) of 1/2" (12.7 mm) I.D. minimum
Compressor	185 cfm @ 100 psi (6.9 kPa) minimum

APPLICATION PROCEDURES

General	Plural Component Application: Prior to introduction into the plural component equipment, the product must be preheated to 70°F - 100°F (21°C - 38°C). Perform at least two ratio checks per day and also after any equipment maintenance. Apply first coat at 60-200 mils (1.5-5 mm). Lighter coats will achieve a smoother finish for higher quality aesthetics. Allow material to gel for 15 minutes before backrolling (only if required). If backrolling, use solvent resistant mohair rollers. Use Carboline Plasite Thinner #19, Thinner #242E or approved equal as rolling solvent to mist down rollers to prevent them from
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APPLICATION PROCEDURES

sticking to the material. Allow material to cure for approximately 30 minutes (depending upon temperature) between coats. Continue building material at 60-200 mils (1.5-5 mm) per coat to specified thickness.

Trowel Application:

Recommended for small areas only. Prior to trowel application, the material must be preheated to a minimum of 70°F (21°C) to achieve a workable consistency. Once material is mixed, it must be poured out of mass onto a clean table or flat working surface to extend the pot life. The material can then be divided into workable amounts. Trowel apply first coat at 60-200 mils (1.5-5 mm). Allow material to gel for 15 minutes before backrolling (only if required). If backrolling, use Carboline Plasite Thinner #19, Thinner #242E or approved equal as rolling solvent to mist down rollers to prevent them from sticking to the material. Allow material to set up sufficiently to support the next trowel applied coat. This will range between 1-4 hours between coats. Continue building material at 60-200 mils (1.5-5 mm) per coat to specified thickness.

Avoid using excessive solvent when backrolling as this can lead to solvent entrapment and lengthen the cure time of the material. Use solvent moistened rollers to back roll material after each subsequent coat to improve finish and level surface if required. Lighter coats will achieve a smoother finish. Contact Carboline Technical Service or refer to the product application manual for more detailed information.

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	21°C (70°F)	5°C (41°F)	5°C (41°F)	0%
Maximum	60°C (140°F)	52°C (125°F)	43°C (110°F)	85%

Air and substrate temperature must be at least 41°F (5°C) and rising. Steel surface temperature should be a minimum of 5°F (3°C) above the dew point. The maximum humidity is 85%. Material must be protected from direct rain until it has reached sufficient cure.

CURING SCHEDULE

Surface Temp.	Touch	Handle	Minimum Recoat Time	Maximum Recoat Time	Minimum Topcoat Time	Maximum Topcoat Time
10°C (50°F)	1 Hour	24 Hours	1 Hour	7 Days	24 Hours	7 Days
21°C (70°F)	30 Minutes	24 Hours	30 Minutes	7 Days	10 Hours	7 Days
35°C (95°F)	30 Minutes	24 Hours	30 Minutes	7 Days	10 Hours	7 Days

*Above cure times are based on 50% relative humidity. Curing times are dependent upon temperature, air movement and humidity. Lower temperatures will slow down the curing process and increase recoat intervals, higher temperatures will speed up the curing process and shorten the recoat intervals. The material can be heated to achieve a quicker recoating and curing schedule. For optimum curing, it is recommended to apply coats at 60-200 mils (1.5-5 mm) wet per coat. If maximum recoat or topcoat times are exceeded, the surface must be mechanically abraded and solvent wiped prior to applying additional coats. Consult Carboline Technical Service for specific details.

TESTING / CERTIFICATION / LISTING

Underwriters Laboratories, Inc.	This product has been tested in accordance with the UL Environmental Test Program and is listed and classified by UL for both exterior and interior use.
Intertek	This product has been tested in accordance with ASTM E-119 at Intertek Laboratories and is listed in the following designs: Wide Flange Columns: CC/IF 180-02 HSS Columns: CC/IF 180-03 Restrained / Unrestrained Beams: CC/IF 180-01
City of Los Angeles	Report: RR 25484

CLEANUP & SAFETY

Cleanup	Flush static mixer, whip hose, gun and tips with hot water or Carboline approved thinner immediately after each use (depending on pump set up). Use Carboline Plasite Thinner #19, Thinner #242E or approved equal for cleaning solvent. Break down static mixer, gun and tip assembly and hand clean.
Safety	Follow all safety precautions on the product Material Safety Data Sheet.
Overspray	All adjacent and finished surfaces shall be protected from damage and overspray.
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 respirator.

MAINTENANCE

General	For patches and repairs, the material can be applied by spray or trowel. Repair areas must be abraded back to a firm edge by sanding or scraping. Remove product from areas in need of repair back to solidly adhered material. Ensure that the primer system is still in tact as well. If not, the primer system shall be reinstated to its original specification. All edges can be left as butt joints at a 90 degree angle or beveled at a 45 degree angle. The topcoat should be abraded back by 1" (25.4 mm) from the repair area. All edges must be solvent cleaned and allowed to dry before commencing application. It is important that the patch area blends into the existing material to achieve a uniform appearance. The product shall then be troweled or spray applied to the appropriate thickness based on the project specification and fire test certification. Once the material has been allowed to sufficiently cure, the specified topcoat system shall be applied, based on the original specification, in strict accordance with Carboline's written instructions.
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PACKAGING, HANDLING & STORAGE

Shelf Life	12 Months Shelf life when kept at recommended storage conditions and in original unopened containers.
Shipping Weight (Approximate)	11 lbs. per gallon (1.3 kg per liter)
Flash Point (Setaflash)	Part A: 185°F (85°C) Part B: >200°F (>93°C)

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PACKAGING, HANDLING & STORAGE

Storage	Store indoors in a dry environment between 32°F - 120°F (0°C - 49°C).
	Can be stored down to 20°F (-7°C) for no longer than 30 days. 0-100% Relative Humidity
Packaging	Full Kits: 9.0 gallons (34.0 liters)
	Part A: 4.5 gallons (17.0 liters)
	Part B: 4.5 gallons (17.0 liters)

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.