

Selection & Specification Data

Generic Type	A two component, 95% 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
Primers	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.
Fireproofing 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 and reach a minimum average Shore D hardness of 40 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.
Film Build	60-120 mils (1.5-3.0 mm)
Solids Content	95%
Theoretical Coverage Rates	1,523 ft ² /gallon at 1 mil (38 m ² /liter at 25 microns)
VOC Values	As Supplied 0.53 lbs/gal (64 g/l)
Limitations	Not recommended for steelwork subject to long-term surface temperatures over 175°F (79°C) in normal use.

Substrates & Surface Preparation

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

Substrates & Surface Preparation

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

Test Method	Results
ASTM D2240 Hardness	> 60 Shore D (fully cured) 40 Shore D (for topcoating)
ASTM D256 Impact Resistance	0.75 ft*lbs/in
ASTM D4541 Bond Strength	> 1,200 psi (> 8.2 MPa) ¹
ASTM D695 Compressive Strength	> 2,330 psi (> 16.0 MPa)
ASTM D790 Flexural Strength	> 1,220 psi (> 8.4 MPa)
ASTM E84 Surface Burning	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 product is supplied in full 9 gallon (34.0 liter) kits. The part A and part B components must be pre-mixed separately before introduction into the plural equipment.</p> <p>Single Component Application: For single component applications, the product is supplied in 4.5 gallon (17.0 liter) kits, one 1/2 full pail of part A and one 1/2 full pail of part B. Add up to 1 quart (1 liter) of Carboline Thinner #19, Thinner #242E or Carboline approved equivalent to part B and mix until fully incorporated. 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 introduced into single component equipment and spraying should commence.</p> <p>Trowel Application: For trowel applications, the product is supplied in 4.5 gallon (17.0 liter) kits, one 1/2 full pail of part A and one 1/2 full pail of part B. Add up to 1 quart (1 liter) of Carboline 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</p>

Thermo-Lag[®] E100 S

Mixing & Thinning

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.

Thinning

Plural Component Application:

Do not thin

Single Component Application:

Thin with Thinner #19, Thinner #242E or Carboline approved equivalent – Maximum 1 quart (1 liter) per 4.5 gallon (17.0 liter) kit

Trowel Application:

Only thin as required with Thinner #19, Thinner #242E or Carboline approved equivalent – Maximum 1 quart (1 liter) per 4.5 gallon (17.0 liter) kit.

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 S may be applied by either single component or plural component application. Use only single component or plural component equipment specifically designed for epoxy based PFP.
Pump	Single Component: WIWA® Herkules 75:1 or equivalent Plural Component: WIWA® Duomix 333 or equivalent
Spray Gun	WIWA® 500 PFP or equivalent
Gun Swivel	5,000 psi (1/2"-3/8")
Spray Tips	0.027" - 0.035" (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.)
Material Hose	Single Component: Use 50' of high pressure spray line with a minimum I.D. of 3/4" (19 mm) Plural Component: 100' heated hose bundle (3/4" I.D. minimum) with 3/4" mixer manifold
Whip Hose	20' (1/2" I.D. minimum)
Compressor	185 cfm @ 100 psi (6.9 kPa) minimum Note: WIWA® is a registered trademark of the Wilhelm Wagner GmbH & Co. KG

Application Procedures

General

Single Component Application:

Prior to spraying using single component airless equipment, the material must be preheated to a minimum of 70°F (21°C) to achieve a consistent fan pattern. Apply first coat at 60-120 mils (1.5-3 mm). Allow material to gel for 20-30 minutes before backrolling (only if required). If backrolling, use Carboline 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

Application Procedures

cure for 4 hours between coats. Continue building material at 60-120 mils (1.5-3 mm) per coat to specified thickness.

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 60-120 mils (1.5-3 mm). Lighter coats will achieve a smoother finish. Allow material to gel for 15 minutes before backrolling (only if required). If backrolling, use solvent resistant mohair rollers. Use Carboline 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 cure for approximately 30 minutes (depending upon temperature) between coats. Continue building material at 60-120 mils (1.5-3 mm) per coat to specified thickness.

Trowel Application:

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 60-120 mils (1.5-3 mm). Allow material to gel for 20-30 minutes before backrolling (only if required). If backrolling, use Carboline 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 cure for 4 hours between coats. Continue building material at 60-120 mils (1.5-3 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	70 °F (21 °C)	41 °F (5 °C)	41 °F (5 °C)	0%
Maximum	140 °F (60 °C)	125 °F (52 °C)	110 °F (43 °C)	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.

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Thermo-Lag[®] E100 S

Curing Schedule

Surface Temp. & 50% Relative Humidity	Handle	Recoat	Topcoat	Touch
70 °F (21 °C)	48 Hours	4 Hours	48 Hours	4 Hours

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 60-120 mils (1.5-3 mm) wet per coat. **Material is ready to be topcoated when an average Shore D hardness of 40 is achieved.** Consult Carboline Technical Service for specific details.

Cleanup & Safety

Cleanup Pump, mixer, hose, and gun should be cleaned with Carboline Thinner #19, Thinner #76 or Thinner #242E at least once every 4 hours at 70°F (21°C), and more often at higher temperatures. After each use or any shut down, the pump, mixer, hopper and gun must be completely flushed with solvent. After flushing pump, remove hopper and bottom foot of pump to clean lower ball check valve. Also remove and hand clean gun, tips and tip housing. The hopper and mixing paddle must be kept clean continuously during application to prevent cured material from falling into the foot of the pump.

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 In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material is cured.

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.

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

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)

Storage Store indoors in a dry environment between 32°F - 100°F (0°C - 38°C).

Packaging **Half kits:** 4.5 gallons (17.0 liters)
Part A: 2.25 gallons (8.5 liters)
Part B: 2.25 gallons (8.5 liters)
Full kits: 9.0 gallons (34.0 liters)
Part A: 4.5 gallons (17.0 liters)
Part B: 4.5 gallons (17.0 liters)

Half kits are used for single component and trowel applications. Full kits are used for plural component applications only.



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