



# ForceField® FireGuard E-84® Intumescent Paint For Steel

## Application Conditions

<b>Generic Type</b>	Water-based intumescent coating designed for the fire protection of structural steel
<b>Description</b>	Thin film intumescent coating that creates a fire retardant and fire resistant barrier on a wide range of building surfaces including gypsum, wood, and steel.  Listed and certified by Guardian Fire Test Laboratories Inc.
<b>Features</b>	-ASTM E-119, ASTM E-84 Tested -Decorative Finish- Gives a smooth decorative finish. -Can be top coated to color choice. -Smooth/ Flat surface -Durable finish- Provides a hard, impact and abrasion resistant surface -Topcoat finishes smooth -Thin film coating- space saving smaller column footprints -Low VOC content -LEED compliant
<b>Color Finish</b>	White Smooth
<b>Primers</b>	Must be applied over a compatible primer. (ALKYD, EPOXY) Generally not recommended for primers with zinc metals.
<b>Top Coating</b>	For interior conditioned space a topcoat is optional. For exterior applications the material must be top coated with an impermeable exterior coating. The choice of topcoat will depend on project requirements. FireGuard E-84® Intumescent Coating must be allowed to cure for 4-5 days prior to the application of a topcoat. Application must be protected from the elements until topcoat is in place.
<b>Wet Film Thickness</b>	Up to 25 - 30 mils per coat
<b>Dry Film Thickness</b>	Up to 13.5 - 16.2 mils per coat
<b>Solids Content</b>	By volume 54%
<b>Coverage rate</b>	866ft <sup>2</sup> / Gal at 1mil 86ft <sup>2</sup> / Gal at 10mil 28.9ft <sup>2</sup> / Gal at 30mil Allow for loss in mixing and application.
<b>VOC Content</b>	3.6 g/l
<b>Limitations</b>	Not for use on exterior environments or for interior steelwork that will be exposed to freeze/thaw cycling or long-term surface temperatures over 140°F (60°C) in normal use without the use of a suitable top coat.

## Substrates & Surface Preparation

**General** Prior to application, steel surfaces need to be cleaned by removing all oil, grease or any loose particles that may interfere with the bond of ForceField® FireGuard®. The substrate must then be primed with a compatible primer.

## Performance Data

Standards Tested To	Results
ASTM E-119-106	2hr Column- Heavy Steel
NFPA 251	1-2hr Beam- Heavy Steel
UL 263	1-2hr Column- Medium Steel
ULC-101-07	1-2hr Beam- Medium Steel
	1-1.5hr Column- Light Steel
	1-1.5hr Beam- Light Steel
ASTM 2768/ ASTM E-84 30 Min Extended	Flame Spread – 0 Smoke Index -5
ASTM D2794	>160 Impact Resistance
ASTM D4541	250psi Adhesion Pull off Strength
ASTM D4060	0.1378 Taber Abrasion
ASTM D2240	67 Durometer Hardness

\*no load small scale

\* Heavy Steel > 25lbs/foot  
Medium Steel = 10-25lbs/foot  
Light Steel < 10lbs/foot

## Mixing & Thinning

<b>Mixer</b>	Use ½" electric or air driven drill with a slotted paddle mixer (300rpm under load).
<b>Mixing</b>	Fireguard® must be mixed using a ½" electric or air driven drill with a slotted paddle or jiffy mixer blade. Mix material for a minimum of 5 minutes to achieve the necessary texture required before spraying.
<b>Thinning</b>	Do not thin.
<b>Tinting</b>	Do not tint.

## Application Procedures

<b>Airless Spray</b>	A single coat, built up with a number of quick passes, allows greater control over quantities, thickness and finish. In most conditions, it is advantageous to apply two thin coats rather than one thick coat
<b>Application Rates</b>	At an ambient temperature of 70°F (21°C), the following application rates are applicable: Max 25 – 30 mil wet per coat depending on application, 24 hour recoat time between coats 1 coat per day *Fireguard can be recoated when previous coat has a shore D hardness of 50 measured at 70°F (21°C)

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## Application Procedures

**Wet Film Thickness** Frequent thickness measurements with a wet film gauge are recommended during the application process to ensure uniform thickness

**Dry Film Thickness** Final thickness must be measured using an electronic dry film thickness gauge such as a PosiTector 6000. For method 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 Equipment Guidelines

Listed below are general equipment guidelines for the application of this product when spray applied.

<b>Airless Spray</b>	Airlessco LP540 or equivalent
<b>Spray Gun</b>	Standard airless spray gun
<b>Spray Tips</b>	0.019" - 0.021"
<b>Fan Size</b>	4" - 10" (depending on section being sprayed)
<b>Hose Length</b>	150' (45m)
<b>Material Hose</b>	3/8" (9.25mm) I.D. minimum
<b>Whip Hose</b>	3/4" (6.35 mm) I.D minimum (optional)

## 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)	125°F (52°C)	110°F (43°C)	85%

\*Steel surface temperature should be a minimum of 5°F (3°C) above the dew point. Fireguard must be protected from exposure to weather. Protect from freezing.

## Curing Schedule

Surface Temp. & 50 % Relative Humidity	Dry to Recoat
77°F (25°C)	24 Hours

\*It is recommended to apply one coat 25 - 30 mils wet per day. Drying time will vary with temp. Thinner coats as well as air movement will help drying time. Another coat of Fireguard® can be applied when previous coat has a Shore D hardness of 50 measured at 70°F (21°C). It can be top coated when a hardness of 60 is achieved after a 4-5 day cure time.

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## Cleanup & Safety

**Cleanup** Pump, Gun, Tips, Hoses, and Mixers should be cleaned once per day with clean water.

**Safety** It is recommended protective equipment should be worn when applying Fireguard®, including spray suits, eye protection, gloves, and respirators. Refer to Fireguard® Material Safety Data Sheet.

**Ventilation** Ventilation should not be less than 4 complete air exchanges per hour until the material is dry.

## Maintenance

**General** If coating becomes damaged, rebuild required thickness by spray or trowel. When dry, smooth and finish with topcoat to match. Damaged areas must be abraded back to a firm edge by sanding or scraping. The topcoat should be abraded back 1" (25.4 mm) from the damaged area. The surface must be clean and dry before applying Fireguard®.

## Testing/ Certifications

Uncertainty Measurement in Guardian's fire testing is less than 1% as per ASTM E 2536-06.

Guardian is accredited and meets the requirements of ISO/IEC 17025 as verified by ANSI/ASQ National Accreditation Board/ A CLASS. Refer to certificate and scope of accreditation report AT1247. Guardian also is accredited as an inspection agency per ISO 17020 through ANSI/ASQ National Accreditation Board/ ACLASS, Report 1547.

N.B.: ANSI/ASQ/ACLASS is a signatory member of the International Laboratory Accreditation Cooperation's (ILAC) Mutual Recognition Arrangement (MRA).

ANSI/ASQ/ACLASS accreditation of Guardian ensures global recognition for Guardian's services.

## Storage, Packaging & Handling

**Shelf Life** 1 year from production date  
\*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in unopened original container.

**Shipping Weight** approximately 12 lbs per gallon (1.44 kg/l)

**Storage** Store indoors in a dry environment between 33°F-100°F (1°C - 38°C). Protect from freezing.

### Packaging



Shield Industries, Inc.

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