



FlameOFF® Fire Barrier Paint



# Application Guide

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# Important Safety Instructions

## General safety instructions

- Read all safety instructions.
- Retain the safety and operating instructions for future reference.
- Follow all operating and use instructions.
- Do not operate equipment around small children.
- Never leave equipment unattended.
- Always use proper safety equipment.

## Fire and explosion hazard: solvent and paint fumes can ignite or explode

To help prevent a fire and explosion:

- Use only in an extremely well ventilated area;
- Eliminate all ignition sources; such as pilot lights, cigarettes and static arcs from plastic drop cloths. Do not plug or unplug power cords or turn lights on or off in spray area;
- Hold gun firmly to side of grounded pail when triggering into pail; and
- Use only conductive airless paint hose.

## Fluid injection and fluid splash-back hazard

- Never allow children to use spraying machinery.
- Engage trigger safety latch when not spraying.
- Keep clear of nozzle and leaks.
- Never spray without a tip guard.
- Wear safety glasses at all times to prevent eye injury.

## Paint bucket safety

- Children can fall into bucket and drown.
- Keep children away from bucket with even a small amount of liquid.



## About Intumescent Fire Protection

FlameOFF® Coatings, Inc. provides intumescent fire protection that exceeds many ASTM E-119 listing standards. Our intumescent products and operations are audited and listed by a certified third party lab to ensure that our products perform as expected in providing building fire safety.

Intumescent paints can be used on steel, gypsum, and wood, in walls and ceilings that need to be rated with ASTM E-119, for 1 hour and 2 hour fire rated standards.

FlameOFF® intumescent paints are typically applied by pressure spray system. The product is water-based and non-toxic. FlameOFF's® Intumescent products are fully LEED accredited.

Intumescent coatings are exceedingly complex coating materials. They need to perform all of the functions that other protective surface coatings do (adhesion, hardness, toughness, corrosion resistance, etc.) and then, when exposed to sufficient heat, they need to transform and expand to form a thick, insulating, carbonaceous char. On top of this, we require that our products deliver an attractive, smooth, architectural finish!

Thank You for your purchase of our intumescent paint. Please feel free to contact our corporate office at 866 - 598 -8470 if you have any additional application questions not covered in the details below.

**an example of  
intumescent char**



# Planning the Intumescent Application

## General intumescent considerations

Plan the whole job completely

The total process includes:

- Testing and application submittal package
- Surface preparation
- Intumescent application
- Drying times and re-coating interval
- Curing time

## Applying intumescent fire protection

Job-site considerations:

- Adequate Ventilation
- Appropriate Temperature and Humidity
- Surface Preparation
- Other Trades in the Job-site
- Drying Times and Re-coating Intervals
- Over-spray

# Humidity

## Relative humidity

Relative humidity should not exceed 85%. Drying/curing times may require adjustment depending on the conditions of the job site.

- It is recommended that a hygrometer be used to measure the humidity. If not accessible, moisten an area to be painted. If it dries within 10 - 15 minutes, the humidity should be acceptable to apply the intumescent coating.
- To check re-coating intervals, apply pressure to the surface using a fingernail or sharp object. If an indentation is created, the product has not cured enough to apply another coat.



**Do not apply FCI  
if humidity exceeds 85%**

## Temperature

Intumescent coatings are very different from normal paint. Temperature and humidity play a very important role during the application process.

Temperature and humidity can cause a product to not adhere to the substrate adequately, and can cause problems with the curing process.

### Temperature

Drying/curing times may require adjustment depending on the conditions of the job site. Use the following as a guide:

- Job-site conditions should be at least 45°F (10° C);
- The ambient temperature of the substrate should be at least 45°F (10° C);
- We recommend that the temperature be maintained within the range given for 48 hours after the final coat has been applied; and
- If necessary, the GC or building owner may have to provide an enclosure to heat and maintain the proper installation temperatures.

Remember that intumescent properties change with temperature and humidity variation. Application during low temperatures will cause the coating to thicken. If applied in very low temperatures, the intumescent coating will not cure, resulting in poor adhesion between coats and an unsatisfactory appearance.

Job-site temperatures can be very hot in the summer months. There are no maximum temperature conditions. However, take caution when applying in higher temperatures, as they can cause the intumescent coating to dry/cure very quickly if the coating is applied at large Mil thicknesses. This can result in visible application marks. If applying the coating in direct sunlight, this can cause a “flash dry” on the outer skin and trap the moist coating on the inside, which can cause a mud crack appearance.

FlameOFF® Coatings, Inc. recommends that in very high temperatures, apply the coating in small mil thicknesses to prevent flash drying from occurring.

# Personal Protection

## To Ensure Personal Protection:

**Wear suitable protective clothing and safety gear.** Read labels carefully and follow all application instructions.

**Eyes** - Safety goggles, face shield, visor, or safety spectacles. This is used to prevent paint particles and droplets from entering the eyes.

**Breathing** - Short term filtering mask can be used when painting. For full time spraying or all day application work, we recommend a full air feed face-mask. This will prevent breathing paint dust, and keep paint particles from entering the lungs.

**Hands**- Latex gloves, armlets, or leather gloves are recommended.

**Hearing** - Hearing protection is recommended to protect inner ear from loud or constant noise levels from spray equipment. Ear muffs or ear plugs are recommended.

**Body** - Overalls or coveralls are recommended to protect clothing from overspray.

**To ensure  
personal safety  
wear suitable  
protective clothing**



# Substrate Preparation

## Preparing the Substrate

Good surface preparation is the key to achieving great adhesion with an intumescent product. Application surface must be clean and free of particulate matter. If old or flaking paint is present, it must be removed.

### Safely removing old paint

Application surface must be clean and free of particulate matter. If old or flaking paint is present, it must be removed.

#### Paint stripper

- A paint stripper can be used by brushing or rolling it onto the old painted surface.
- Leave for 15-30 minutes until the old flaky paint lifts or dissolves.
- Scrape off old paint; clean with hot water, and prepare the surface for application.

#### Alternative to paint stripper

- Abrading with coarse paper- be careful not to damage the substrate.
- Hot air gun - used for removing many paints and varnishes.
- Paint scraper - used for removing many paints and varnishes.
- Dry or mechanical abrasion using coarse paper, or a belt or disk sander.
- Abrasive (sand) blasting- normally carried out by a professional with the necessary equipment. Ideal if you want to restore the substrate to its original state.

#### Pre-cleaning (if required)

Use a high strength cleaner or degreaser to clean the substrate in order to remove fuel, oil, grease, wax, or similar materials. If using a degreaser, be careful not to damage any existing coatings.

# Application Methods

## Recommended Application Methods

FlameOFF® Coatings recommends that our intumescent paint be applied with an airless paint sprayer or paint brush. We do not recommend application by paint roller.

### Brush

**Advantages** - Low cost and often the most suitable way to paint complex objects.

Works well for rough surfaces.

**Recommended thickness per coat** - 10 Mil WFT

- Use a good quality brush that's as large as possible for the job.
- Don't use a new brush for the final coat, they tend to shed bristles.
- Use a criss cross motion; brush from side to side and then up and down.
- Continue until the paint is evenly distributed over the area.
- Angle the brush at a 45° angle to minimize brush marks.
- During application the paint will start to dry on the brush. It is recommended that you clean the brush every 30 minutes to keep good painting consistency.

### Spray equipment

**Advantages** - Quickest application method, cuts down on labor. Delivers smooth, uniform coats.

**Recommended thickness per coat** - 20-45 Mil WFT, depending on applicator experience.

**Airless Paint Sprayer** - Use 1.0 gal. per minute electric airless (minimum) to provide an operating pressure of 3,000 p.s.i. (210 kg/cm<sup>2</sup>).

*\*\*Remove rock catcher from siphon tube. \*\**

**Spray Gun** – Contractor Gun (with filters removed) or equivalent

**Spray Tips** – 0.021" - 0.025"

**Fan Size** – 4"-10" (depending on section being sprayed)

**Hose Length** – 50' (15 m) maximum

**Material Hose** – 1/2" I.D.

## Intumescent coating – mixing

**Mixing** – Power stirring is required to thoroughly mix the intumescent coating. The intumescent coating should be a “uniform, smooth and creamy” consistency. Hand-held mixers are recommended to be used with a slotted drywall paddle or Jiffy mixer blade. 2 to 3 minutes of mixing is recommended.

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

**Thinning** – Do not thin.



## Job-site downtime

Job-Site downtime may occur when other trades are in the building, or between application coats. If this occurs, immerse the tip of the gun in water and cover the open product pail that is being applied. For extended downtime, it may be necessary to run water through the pump and hose. If a skin occurs on top of the intumescent coating in the bucket, **REMOVE PAINT SKIN. DO NOT MIX OR TRY TO SPRAY.** This will cause tip clogs and will result in an undesirable finish.

## Applying multiple coats of intumescent paint

Multiple coats of intumescent paint are usually necessary to achieve the required Dry Film Thickness (DFT). The thickness per coat is based on the applicator's experience, application equipment, and environmental conditions.

Example: An experienced applicator may be able to achieve the smooth finish by applying 45 mils wet while the inexperienced applicator may only be able to achieve 20 wet.

**APPLICATION AND COATS ARE BASED ON EXPERIENCE**

## Application Thickness

Required paint thickness is given in Mils as Wet Film Thickness (WFT) or Dry Film Thickness (DFT) and is dependent upon the substrate it is applied to, and the desired fire rating. WFT is measured during application process. DFT is measured after the coating has cured.

### Mils and Microns

- Mil - A unit of measurement in the English system that is measured in thousandths of an inch. (i.e., .001 = one thousandth of an inch or 1.0 mil)
- Micron - A unit of measurement in the metric system that is equal to one thousandth of a millimeter.

FlameOFF® Coatings, Inc. uses the Mil measurement. We have added the following calculations to help our international applicators compute the correct mil thickness.

### Exact conversion

**Mils to Microns:** (number of mils) x 25.4 (i.e., 30 mil = 762 microns)

**Microns to Mils:** (number of microns) / 25.4 (i.e., 762 microns = 30 mil)

## Wet Film Thickness (WFT)

Wet film thickness is a measure of the thickness of wet paint or liquid based coating, and should be monitored during application process using one of the following:

- Wet film gauge; or
- Calculated method with checks.



A wet film gauge is required to be 100% precise. It is recommended that you check the wet film thickness every three feet to ensure 100% accuracy.

This method is used to determine how much product is needed for a specific area. Calculate the square footage (SQ/FT) and perform the calculation with the required dry film thickness (DFT) and this will determine how much paint needs to be applied to a specific section. This can cut down on the amount of wet film thickness checks.

## Dry Film Thickness (DFT)

Dry film thickness is a measure of the thickness of an applied coating once it has cured. It should be checked once the product has dried, using a calibrated Dry Film Thickness gauge.

If a decorative topcoat is to be applied, the DFT must be read prior to the topcoat application. DFT must be taken on the primer coating prior to applying the intumescent paint. The DFT of the primer must be recorded and subtracted when calculating the DFT of the intumescent paint. DFT readings should be taken every 12 inches. For complex members, please consult the **AWCI Technical Manual 12-B, "Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials."**

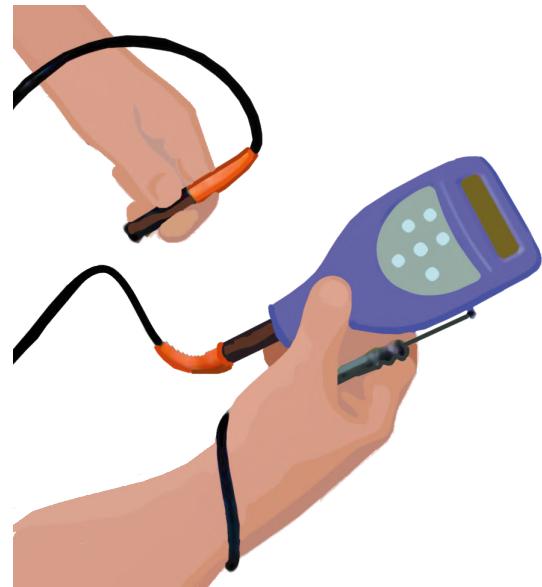
## Intumescent coating – dry film acceptance

The average thickness of the intumescent coating should be equal to, or greater than the required thickness. The thickness at any given point must not be less than or equal to a 10% variance of the required dry film thickness. If the intumescent coating has a variance greater than 10%, additional intumescent coating should be applied to achieve the required dry film thickness.

(ICC –CODE REQUIREMENT)

FIRE-TECH MANUAL APW 12

**testing dry film thickness with a calibrated gauge**



## WFT and DFT Conversion

FlameOFF® Coatings Intumescent Paint is 70% solids by volume. Therefore, to convert between Wet and Dry Film Thickness, use the following:

$$\text{DFT} = \text{WFT} \times 0.70$$

$$\text{WFT} = \text{DFT} / 0.70$$

## Intumescent coating – sagging / over-applying

Sagging can occur as a result of poor spray technique, excessive coating thickness, or thinning of the intumescent paint. Do not attempt to thin intumescent paint. Sagging can cause surface defects and adhesion loss, and should be removed and reapplied.

## Intumescent coating – over-spray / dry-spray

Over-spray can occur due to weather conditions, excessive pressure on the airless sprayer, and use of the wrong tip size. To minimize over-spray/dry-spray, use good spray techniques including the proper pressure and correct tip size. If conditions are windy or nearby materials cannot tolerate any over-spray, the applicator must provide proper masking to stop the intumescent coating from drifting onto neighboring surfaces.

## Intumescent coating – maintenance and repair

The fire protection properties of the intumescent coating remain in place as long as the integrity of the intumescent coating is intact. It is not required to perform maintenance inspections. In the event that the substrate has been damaged or altered, or the intumescent coating has been compromised, the coating must be repaired.

## Intumescent coating – storage

**Shelf life** - 12 months (when kept at recommended storage conditions and in original unopened containers)

**Storage** - Store indoors in a dry environment between 40°F - 100°F (4°C - 38°C)

**Packaging** - 5 Gallon Pails

**Shipping weight** - 64 lbs per 5 Gallon Pail

## Intumescent coating - troubleshooting

If the spray tip is constantly clogging, raise the pump pressure in increments or change to the next tip size up.

- Non-compatible primer.
- Temperature, humidity not within range of desired application.
- Product has been thinned.
- Previous coat not cured before another coat is applied.

Slow drying time

- Intumescent coating was applied too thick.
- Temperature, humidity, and ventilation not within range of desired application.

Intumescent coating not spraying or flowing properly

- Equipment, pressure, blockage, tip size not within recommended range.
- Spraying equipment is not clean.
- Intumescent coating is not mixed to a "creamy, smooth" viscosity.
- Spray filters are left inside equipment.

Bubbles and blistering in intumescent coating

- Primer is not compatible.
- Primer is not cured before Intumescent coating is applied.
- Temperature of the substrate too high.
- Spray pressure is too high or spray gun is too close to substrate surface.

