



INTUMESCENT FIRE PROTECTION STRUCTURAL STEEL

APPLICATION INSTRUCTIONS

Surface Preparation:

All surface preparation should be carried out in accordance with good painting practices. Remove all loose, peeling or powdery paint from the surface. All dirt, grease, oil, wax and other foreign material must be removed with a suitable cleaner and allowed to thoroughly dry. Steel must be primed with an approved anti-corrosive primer, tested for adhesion both before and during burn testing.

Approved Primers:

Quantum Chemical: **PRECIDIUM™ Epoxy 41P**
PPG: DevGuard 4190; Spectracron QAP 111

Application:

For optimal finish, apply **SafeCoat® Steel** using airless spray equipment. Remove both the gun and pump filters prior to spraying. See the detail application instructions for specific equipment recommendations.

SafeCoat® Steel is a heavier body paint requiring mechanical/shear mixing for best product viscosity for spraying. Use reliable and consistent pumping equipment to achieve optimal results. Apply each coat uniformly to entire surface to obtain smoothest finish (31-54 mils WFT/20-35 mils DFT per coat to avoid product sag). Apply one coat per day or recoat once prior coat reaches a Shore D hardness of 50.

Surface and ambient temperature must be maintained at greater than 50° F (10°C) during application and must remain so for at least 48 hours following the application.

Ensure the proper QC Form is filled out and provided to the site inspector and Quantum Chemical. The form is available from the distributor.

SafeCoat® Steel is intended for **interior use only**. If the coated substrate will be subject to repeated washing, prolonged high humidity, or high traffic, a suitable top coat is required. More than one additional finishing coat could adversely affect the flame spread rating and smoke developed classification. Consult the product distributor for suitable top coats. A wet film thickness gauge can be used at the start of the application to check that sufficient **SafeCoat® Steel** has been applied.

Clean Up: All application tools can be easily cleaned with water. If product has dried on, use hot soapy water to soften and remove it.

Precautions: **SafeCoat® Steel** is not "WHMIS" regulated nor is it subject to the "Transportation of Dangerous Goods Act and Regulations". See SDS for detailed precautions. **PROTECT FROM FREEZING** as freezing will damage the product.

PRODUCT WARRANTY

Recommendations for the use of our products are based on tests carried out at government approved labs. Manufacturer and seller are not responsible for results where the product is used under conditions beyond our control. The purchaser of this product must rely on his own judgement in determining suitability for his purpose, and in applying directions as to handling and use. Quantum makes no warranty, expressed or implied, except that if this product proves on inspection to be defective, Quantum will replace such quantity of the product proven to be defective or refund the purchase price of defective product. Labour costs and other consequential damages are hereby excluded. No representative or purported agent of Quantum has the authority to change this warranty. The information contained herein is subject to change without notice. If in doubt, contact your Quantum Representative for current Technical Data Sheets (TDS).

SafeCoat® Steel Structural Steel Protection

- Water-based intumescent fire-resistant paint designed to fire protect interior structural steel and is:
 - off-white in colour with a flat finish and slight orange-peel appearance (may vary depending on application)
 - 65-75D Hardness
- Optimal finish of **SafeCoat® Steel** is achieved using airless spray equipment with reliable and consistent pumping equipment
- **SafeCoat® Steel** is a heavy-body paint requiring mechanical shear mixing for best product viscosity for spraying
- **SafeCoat® Steel** mil thickness requirements are project-specific, determined by both the size of the steel members and the specified time to be protected

Top Coat

For interior General Use:

SafeCoat® Steel can be top coated with high-quality latex paints for decorative purposes or where specific colour and sheen are required. Top coating is highly recommended to improve stain and moisture resistance.

For Interior Non-Conditioned Space Use (including the following conditions):

- Occasional prolonged periods of humidity >75%
- Frequent cleaning/abrasion
 - Arenas (occasions of high levels of humidity)
 - Aquatic Centres/ Pools (high levels of chlorine)
 - Grow and cultivation facilities (cleaning/water spray)
- Frequent cleaning/abrasion
 - Food Plants
 - Grow and cultivation facilities

SafeCoat® Steel may require a more durable finish than a standard interior latex topcoat. The finish coat can be any color and gloss level and should be a material that will protect the intumescent coating against high humidity and other potentially harsh interior environmental conditions, while providing a smooth, attractive, architectural finish. The top coat must be specifically approved for use by Quantum Chemical based on in-house testing completed, and in consultation with our distributors project-specific recommendations.

EQUIPMENT REQUIREMENTS

Pumps

- Pneumatic, electric or gas-powered airless spray pump operating with a minimum fluid pressure of 3,000 psi and 4.7 L/m (1.25 gpm)
- Must have reliable and consistent pumping
- All filters are removed for spraying
- A direct immersion pump is required (pumps utilizing siphon hoses at the material intake not recommended)
- Graco Mark V or equivalent recommended

Pre-Heating

- Pre-heat to a minimum of 21°C (70° F) for 24 hours prior to application (cold material will not spray well)
- Can be heated using heating storage units/hot rooms (may be constructed from insulated storage containers and fitted with a suitable controlled-temperature heater)
- Material temperature can be measured using a probe thermometer or IR gun
- DO NOT use electric jacket heaters that wrap around the outside of the pails; can overheat the outside perimeter of the pails and “cook” the material around the inside, making it unusable

Mixing

- Mechanical/shear mixing is required for best product viscosity for spraying
- Standard shielded drywall mixing paddle, Jiffy style mixer, or ½” electric drill with a slotted paddle mixer
- Prior to use, thoroughly mix for 2-5 minutes until completely blended and consistent colour is achieved

Hoses

- High pressure, minimum 10 mm (3/8”) hose rated to exceed the maximum pump capacity
- Maximum hose length of 150’ must not be exceeded
- Optional 6.35mm (1/4”) whip hose is acceptable at a maximum of 61cm (2’) length

Spray Gun

- Graco HD Texture Spray Gun Model #241-705, Series B, or equivalent with diffuser tip removed and capable of handling 3,000 psi fluid pressure
- All filters removed

Spray Tip

- High pressure reversible tip with a 0.017- 0.025” orifice and 3-12” fan pattern
- Match tip selection to the steel section being coated to balance coverage and minimize overspray
- 0.019-0.025” Graco RAC X LP (green) recommended for best results

General and Instrumentation Tools

- PPE: eye, ear, respiratory, and skin protection
- Polyethylene plastic, tape and tarps: masking
- General painting and prep tools: sandpaper; high-grade soft bristle latex paint brushes for touch-ups; roller to lightly roll edges of flanges to even/smooth out product
- Hygrometer: measures environmental conditions
- Probe thermometer/IR Gun: measures product temp.
- Wet Film Thickness (WFT) Gauge: suitable to measure the higher WFT mils required per each application
- Ferrous Thickness Gauge: to measure final DFT mils to be recorded on the Quality Control Form (QCF)
- QCF: completed with data from project start to finish



INTUMESCENT FIRE PROTECTION STRUCTURAL STEEL: Application Details

APPLICATION

Environment

- Minimum ambient temperature of 10°C (50° F) and rising; maintained during and minimum 48 hours after
- Maximum relative humidity of 85%; high humidity will increase drying times and may promote sagging
- Steel temperature 2°C (4° F) above the dew point
- Maximum environment and substrate temperature of 38°C (100° F)
- **SafeCoat® Steel** must be protected from weather exposure and freeze-thaw during application to full cure
- Tarps may be used to enclose work areas; also helps maintain proper substrate and ambient temperatures
- Confirm the surface has been properly prepared
- Primer is properly cured and within recoat window
- Confirm adjacent areas are properly masked off: typically with lightweight polyethylene plastic and tape

Material

- Pre-heated to: minimum of 21°C (70° F); maximum 38°C (100° F) prior to spraying
- Thoroughly mixed with recommended equipment

Equipment Setup

- Pumps and Lines: must be clean and uncontaminated
- Prior to start-up: all pressure is removed from lines
- Filters: all filters are removed from guns and pumps

SafeCoat® Steel Application

- Adjust to lowest pressure required to achieve the desired fan pattern
- Keep the fan at an angle of 90° to the surface and at 18"-24" away from the surface
- Typical film build: 30-40 mil WFT (20-26 mil DFT)/coat
- Applying first coat at 20 mil DFT maximum will reduce sagging and improve adhesion
- Take frequent wet film thickness measurements during application to ensure WFT coating uniformity
- Apply subsequent coats at 24 hour intervals or once surface reaches Shore D Hardness of 50
- Lightly sand dry-spray on the steel before next coat
- Continue building material in as many coats as is required for the steel member size and rating specified for the project, ensuring thickness is equal to, or greater than the recommended requirement
- Care should be used when spraying flange edges on structural steel members to ensure complete coverage and consistent thickness
- Normal spray pattern on the outside and inside surfaces of flanges should cause the material to flow and wrap around the edge of the flange; if uneven on the edge after application, lightly roll the edge to make even and smooth
- Excessive orange peel or sagging can be sanded between coats or before application of topcoat

Top Coat Application

- Confirm **SafeCoat® Steel** has been applied to the specified dry film thickness by using an electronic or magnetic dry film thickness gauge (Ferrous)
- **SafeCoat® Steel** must be sufficiently cured prior to the top coat application by confirming the Shore D Hardness of 50 has been achieved
- Use only the pre-approved, project-specific top coat
- Ensure top coat is applied within manufacturers' and projects stated ambient conditions, temperature and relative humidity specifications

Repair Procedures

Patching Small Damaged Areas

- Completely remove **SafeCoat® Steel** slightly beyond the damaged area, using a grinder/utility knife/chisel
- With sand paper, remove additional 1/4" of the coating
- Clean steel surface of any dust, dirt, grease or any other material that may impair bond and re-apply primer if the existing primer is damaged
- If a different approved primer is used over an existing primer, ensure they are compatible
- Build **SafeCoat® Steel** to the thickness specified for the required hourly protection

Clean Up:

- The application area should be maintained in a clean and orderly condition at all times
- Following each application, all overspray, debris and equipment should be removed from the area and the area left in a condition acceptable to the Owner and General Contractor
- Ensure proper maintenance and cleaning of all tools and equipment: pump, gun, tips, hoses and tools should be cleaned at least once per day with water
- If product has dried on, use hot soapy water to soften and remove it

Quality Control

- Complete Quantum's Quality Control Form (QCF)
- Fill out the form each day during the project to record accurate environmental conditions and coating mil thicknesses for each steel member size
- Use additional pages as required
- Provide detailed and signed form to the site inspector
- Return a copy of the QCF to the distributor as confirmation the project was completed accurately using **SafeCoat® Steel**
- A completed and signed QCF must be received upon project completion in case we are subsequently contacted by the site inspector for further clarification
- The QC Form is available from the distributor.



INTUMESCENT FIRE PROTECTION STRUCTURAL STEEL: Application Details

SafeCoat® Steel

APPLICATOR REQUIREMENTS

- Must be a qualified painter/coatings applicator with a thorough understanding of good painting practices, painting terms, painting tools and equipment
- Experience with heavy-build intumescent fire retardant coatings is helpful; support is available as required
- Have the necessary approved spray equipment and recommended quality control instrumentation
- Fill out the manufacturer's Quality Control Form and return to the distributor upon project completion
- Provide QC to site inspection personnel as required
- Follow statutory requirements for Health and Safety

SAFETY FIRST

- Read and follow product SDS for handling and PPE
- A 5-gallon pail of **SafeCoat® Steel** weighs 30kg/ 66 lbs.; use caution when lifting and moving pails
- Applicator must follow standard industrial hygiene practices, conform to applicable codes of practice, regulations, and Owner Safety Rules, in all respects
- When power tools, hand tools, spray equipment or other mechanical equipment are used, follow proper operating procedures for each tool or piece of equipment, as well as use of required eye, hearing, and respiratory protection
- Spray equipment used to apply **SafeCoat® Steel** is under high pressure; injuries from high pressure liquids can be serious and may require medical attention

PRODUCT DELIVERY

- **SafeCoat® Steel** must be delivered to the site in original, unopened containers
- **SafeCoat® Steel** will be damaged by freezing; ensure the product is not frozen when delivered
- Product name, batch number, manufacturer, and safe handling and storage instructions must be visible

PRODUCT STORAGE

- Material not used immediately should be stored off the ground/on the pallet in a designated covered area
- Must be protected from temperatures above 38°C (100° F) and below 1°C (33° F) AT ALL TIMES
- Minimum application temperature: 21°C (70° F); Maximum application temperature: 38°C (100° F)

OVERSPRAY PROTECTION

- Mask off all adjacent areas and equipment from product overspray during application
- If overspray does occur, remove promptly before the product cures
- For proper adhesion, lightly sand overspray off steel members between applications

PRODUCT REQUIREMENTS

Primer

- Primers must be approved by Quantum Chemical for use with **SafeCoat® Steel**
- Approved primers are applied to a properly prepared surface (SSPC-SP2 or SP3) in accordance with manufacturer's instructions and project specifications
- Quantum Chemical's primer approval process consists of the following:
 - **ASTM D4541-09** Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
 - Expected results are inter-coat adhesion failure within the **SafeCoat® Steel** product itself
 - Second, the Primer is approved based on adhesion performance with the **SafeCoat® Steel** during a fire test; the coating must remain intact on the steel in order to achieve the protection specified
- When the steel is pre-primed with an unknown primer:
 - **ASTM 3359-09** Standard Test Methods for Measuring Adhesion by Tape Test, Method A, X-Cut Adhesion Test for On-Site Testing with a minimum 3A Rating must be done
 - Based on extensive in-house testing with Primers, we have determined Zinc-Rich Primers incompatible with **SafeCoat® Steel** during a fire
 - If the Primer passes the **ASTM3359-09** and it can be confirmed that it is **NOT** a Zinc-Rich Primer, clean and lightly abrade in accordance with SSPC-SP2 or SP3 to roughen and de-gloss the surface
 - If compatibility of the current Primer cannot be 100% confirmed, or does not pass **ASTM 3359-09**, it must be removed and the areas re-primed with a compatible primer
 - If the Primer passes the **ASTM 3359-09**, but compatibility cannot be confirmed, an approved Primer can be used as a tie-coat primer; prepare the substrate according to manufacturer's instructions
 - Prior to application of the **SafeCoat® Steel**, record the dry film thickness (DFT) mils of all Primers using a Ferrous Thickness Gauge. Add the DFT mils to the final DFT mil requirements of the **SafeCoat® Steel** to ensure total DFT of the **SafeCoat® Steel** is accurate as originally specified for the project

Approved Primers: Quantum Tested and Approved

- Quantum Chemical: **PRECIDIUM™ Epoxy 41P**
- PPG: DevGuard 4190; Spectracron QAP 111
- Other Primers can be specified as per the above qualifications/equivalencies. Contact Quantum Chemical for primer approval/additional information.