

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 manufacturer 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
- 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:
 - **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 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
 - In our testing, we've found Zinc-Rich Primers are not compatible 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**
- Cloverdale Paint: 70323; 71044; 70327; 71199
- PPG: Multiprime 4160; DevGuard 4190; Spectracron QAP 111; NLP Series Primers
- Sherwin Williams: ProCryl; DTM Bonding Primer
- Other Primers can be specified as per the above qualifications or equivalencies. Contact Quantum Chemical for primer approval or additional information.

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/Pool (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 Ultra Max 795 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 0.020- 0.025” orifice and 3-12” fan pattern
- Match tip selection to the steel section being coated to balance coverage and minimize overspray
- 0.020-0.025” Graco RAC X LP (used to be green, now are yellow) 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

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: 25-35 mil WFT (17-23 mil DFT)/coat
- **Applying first coat at 20 mil WFT 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 Quantum Chemical as confirmation the project was completed accurately using **SafeCoat® Steel**
- A completed and signed QCF must be received upon project completion so Quantum is aware our product was used on a project and in case we are subsequently contacted by the site inspector for further clarification
- The QC Form is available both from the distributor or Quantum's website at www.quantumchemical.com