PPG STEELGUARD™

FAQ's – Frequently Asked Questions

INTRODUCTION

This document provides answers to frequently asked questions about the PPG STEELGUARD range of intumescent coatings for fire protection of structural steel. It is intended for specifiers, applicators and project teams. For full technical information, always refer to the relevant Product Data Sheet (PDS), Application Guidelines and Declaration of Performance (if applicable).

This document is intended as a general guidance tool. For project-specific advice, always refer to the individual product documentation and seek advice from qualified fire-protection/coating specialists.

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1. What is the STEELGUARD range, and what does "intumescent coating" mean?

Q: What exactly is PPG STEELGUARD?
A: The STEELGUARD range is a series of one-component (and in some cases two-component) intumescent coatings manufactured by PPG under the umbrella of PPG Protective & Marine Coatings. These coatings are designed to protect structural steelwork by swelling ("intumescing") under fire conditions, forming an insulating layer that helps maintain steel stability during a fire.

Q: Why use an intumescent coating rather than a conventional paint or fire-resistant board?
A: Compared with heavy fire board cladding or sprayed fire protection, intumescent coatings offer thin-film, aesthetic protection — ideal where exposed architectural steel is required. They add minimal buildup, allow structural steel to remain visible, and provide proven fire resistance. The STEELGUARD range offers this along with corrosion protection and aesthetic finish.

Q: What kinds of steelwork and environments are suitable?
A: The range is suitable for structural steel in commercial buildings, infrastructure (airports, stadia), industrial facilities and more. They are formulated for both off-site and on-site application and for internal and external conditions, depending on product selection.

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2. What performance can I expect (fire protection, corrosion, exposure)?

Q: How long will the fire protection last?
A: It depends on the specific STEELGUARD product and thickness applied. For example:

- STEELGUARD 701 provides up to 90 minutes (1½ hours) of cellulosic fire resistance.
- STEELGUARD 751 is certified up to 150 minutes (2½ hours) for some applications.
- STEELGUARD 951 offers up to 4 hours of cellulosic fire protection.

Always check the approved certification, fire rating, substrate profile, application thickness (DFT), and exposure conditions before specifying.

Q: What about corrosion protection or external exposure?
A: Many STEELGUARD coatings are suitable for various environmental exposure categories defined in ISO 12944. For instance, STEELGUARD 951 offers corrosion resistance up to ISO 12944 C5 (aggressive environments) without the need for a separate topcoat. For others, a suitable topcoat may be required to meet external durability. The environment approved is for the entire system, so even if a primer is suitable for C5 for example, it does not necessarily mean that the full system is approved for C5.

Q: Do I always need a topcoat?
A: Not always. It depends on the exposure category and the specific STEELGUARD product. For instance, STEELGUARD 951 may not require a topcoat even in C5 environments. For other products in the range, an approved topcoat system must be applied to fulfill durability requirements. The STEELGUARD APPROVED TOPCOATS document outlines the correct combinations.

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3. What are the key application considerations?

Q: What surface preparation is required?
A: As with all protective coatings, surface preparation is critical. The steel substrate must be prepared to the standards specified in the PDS (for example, blast cleaned to a specified Sa level, etc.). The STEELGUARD APPLICATION GUIDELINES provide full details for each product.

Q: What about application methods and film thickness?
A: Application method (airless spray, plural component spray, trowel) depends on the product. For example, STEELGUARD 951 is specifically designed for airless spray, achieving up to ~3500 µm DFT in one coat. The required DFT will depend on the fire rating required and steel section profile — calculations must be undertaken using the approved testing certificate or engineering design.

Q: What about environmental (temperature/humidity) and handling?
A: Application must be carried out within the specified temperature/humidity limits in the PDS. After application, adequate curing time must be allowed before handling, transport or exposure to weather. Some products allow for next-day handling (e.g., STEELGUARD 951) to support fast-track modular construction. For external exposure, ensure the coating is protected from running/pooling water if no topcoat is applied.

Q: How is damage or touchup handled?
A: The STEELGUARD APPLICATION GUIDELINES document gives advice on how to treat any damage & repairs. Only compatible products/finishes should be used. Any reapplication must ensure that the DFT is restored to meet the originally specified fire rating. Always consult PPG's technical services for field damage repairs or modification to steel profiles post-coating.

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4. Specification and compliance issues

Q: What compliance standards do STEELGUARD products meet?
A: The range is tested and certified against relevant European, British and international standards for fire protection of structural steel (e.g., EN 13381-8, BS 476-20/21, GB standards). For example, STEELGUARD 751 is assessed to EN 13381-8, BS 476-20/21 and GB14907 for up to 150 minutes protection. The STEELGUARD 951 version is tested to EN, ASTM, UL and ISO standards for up to 4 hours.

Q: How do I specify the system correctly?
A: When specifying, include:

- Steel section profile & fire rating (minutes) required
- Exposure environment (ISO 12944 category)
- Coating product name (e.g., STEELGUARD 751 / 951, etc.)
- Required DFT and any topcoat system (if applicable)
- Surface preparation standard
- Compliance certificate or test report reference
- Applicator competency requirement

Make sure to reference the effective PDS date and that the version used is the most current.

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5. Frequently asked operational/use questions

Q: Can I coat the steel on site after erection, or does it have to be off-site?
A: Both are permissible, depending on access, ambient conditions and logistical constraints. Some products (e.g., STEELGUARD 951) are specifically designed for off-site/factory applications as well as on-site. Ensure that the required curing and handling conditions are met before transport/erection.

Q: If the steel is already erected, can the coating be applied around field connections/welds?
A: Yes — field welding and bolted connections can be accommodated, but the design and specification must ensure that the required fire rating is maintained for the full section including welded/bolted zones. Touch-up or additional intumescent may be required around welds or penetrations. Consult the engineering/fire-protection specialist.

Q: What happens if I need to re-drill holes or cut steel after coating?
A: Alterations post-coating will affect the fire rating and must be reviewed. Cut ends should be suitably re-primed/coated or intumescent reapplied as specified. Contact PPG technical services for guidance on re-work to maintain certification.

Q: Does the coating affect the appearance of the steel? Can it be colour-matched?
A: Yes — the STEELGUARD range offers a smooth finish, enabling exposed architectural steel. Some products can accept topcoats in a variety of colours and the range supports aesthetic requirements However, colour matching or special finishes must be checked for compatibility with the intumescent and topcoat system specified.

Q: How should the steelwork be maintained after coating?
A: Ensure regular inspection of the coating for damage, corrosion or wear. Any damage should be repaired promptly, and any modifications to the structure (such as new penetrations, welding or cutting) should be assessed for fire-rating impact. If a topcoat is present, maintain the topcoat as per its maintenance schedule.

Q: What is the shelf-life of the products?
A: The PDS will give the shelf-life under specified storage conditions (temperature, humidity, container sealing). Always check the date of manufacture and store per the manufacturer's recommendation to maintain performance.

Q: Are there special health & safety concerns during application?
A: Yes — intumescent coatings often contain special chemicals. Ensure that applicators use appropriate PPE (respiratory protection, coveralls, gloves, eye protection) and that ventilation, spray-extraction and grinding/blasting dust control are in place. Refer to the Product Safety Data Sheet (SDS) for each product.

Q: At what temperature do intumescent coatings activate?
A: Activation typically begins around 200°C (392°F), with full expansion occurring between 550–600°F (288–316°C). The binder typically degrades before this temperature range, so it is important for projects that include hot surfaces, that the applicable PDS is used to ascertain that the product/system is suitable.

Q: How thick is intumescent paint and how much does it expand?
A: Dry film thickness varies by product and fire rating, but expansion can be 50–100 times the original thickness.

Q: What is the expected lifespan of intumescent coatings?
A: With proper maintenance, they can last several years to decades, depending on exposure and application quality. UL2431 durability testing is indicative of a 20-year lifetime, with EAD 350402-00-1106 being indicative of 10 years. There is a study to look at increasing the EAD durability testing to extend to 25-years lifetime, with many suppliers having their own fire-test evidence showing a 25-year lifetime expectancy.

Q: Is system life expectancy the same as durability?
A: Life expectancy is the expected service life of the intumescent system — how long it will provide its intended fire protection performance over the design life of the building before it needs major maintenance or replacement.
This can be determined by, for example: environmental exposure (internal, semi-exposed, or external conditions); the coating system (intumescent + primer + topcoat); and manufacturer testing and certification. Durability is a coating's resistance to environmental factors such as moisture, UV exposure, temperature fluctuations, and mechanical wear — i.e., how well it withstands its service environment without degrading.

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Q: What is the maximum thickness allowed of intumescent coatings?
A: Application of more than 20% extra DFT is not good painting practice. Never use more thickness than the maximum DFT according to the listing/assessment, as per the relevant substrate shape and orientation. To be site practical, it is PPG's interpretation that the actual applied DFT must never exceed 10% more than those values.

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6. Common troubleshooting and myth-busting

Myth: "If I apply more thickness than the specification, my fire rating will automatically increase."
A: Not necessarily. The fire rating is determined by certified test data for specific section types, thickness/density profiles and substrate conditions—not simply "more paint = more protection". If you depart from the certified DFT or section profile, the fire rating is no longer guaranteed. Always use the test certificate and manufacturer guidance.

Myth: "We don't have to consider corrosion because the intumescent is thick enough."
A: Incorrect. While some STEELGUARD products include corrosion resistance, the specification must consider the environmental exposure (ISO 12944 category) and whether a topcoat is required. Neglecting corrosion can reduce the coating's service life and compromise fire performance over time.

Myth: "We can use any topcoat we like over the intumescent."
A: No. Only topcoats approved by PPG for the STEELGUARD range should be used, as detailed in the STEELGUARD APPROVED TOPCOATS document. Use of un-approved or untested topcoats and/or primers can invalidate certification and warranty.

Myth: "It's OK to apply the intumescent in wet weather, as long as it stops afterwards."
A: This is risky. Application conditions (surface temperature, relative humidity, dew point, drying time) matter greatly. Applying outside the recommended conditions can result in poor adhesion, curing defects or compromised fire performance. Always follow the PDS/application guidelines.

Myth: "Any coating applicator can apply this without special training."
A: Not recommended. Intumescent coatings for structural steel demand experienced applicators, correct equipment, surface preparation and quality assurance. Many PPG systems require applicator pre-qualification, adherence to inspection regimes and certification of application.

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7. Project planning and best-practice tips

- Specify early: Engage fire-protection, structural and coating specialists early to ensure the coating system aligns with the steel profile, fire rating, exposure and aesthetic requirements.
- Mock-ups: Where exposed finishes are required, provide a visual mock-up of steel, coating and topcoat for sign-off.
- Quality assurance: Ensure the specification includes inspection/verification of DFT (dry film thickness), adhesion, curing and documentary evidence (certificates, batch numbers, test records).
- Logistics: For off-site application, coordinate steel transport/handling to avoid damage to the coating. For on-site, ensure scaffolding, access, weather protection and curing time are planned.
- Maintenance: Include a maintenance plan in the specification covering inspection intervals, repair procedures and periodic coating condition reviews.
- Documentation: Retain all product data sheets, certificates of compliance, application records and maintenance logs. These may be required for fire compliance or insurance records.

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8. Contact & support

For further technical help, product data sheets, certificates or project-specific advice:

- Visit the PPG Protective & Marine Coatings website: ppgpmc.com
- Contact your local PPG technical representative or approved applicator for STEELGUARD systems.
- Always ensure you are referring to the latest version of the Product Data Sheet, Safety Data Sheet and Application Guidelines.

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PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG's specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product. THESE ARE THE ONLY WARRANTIES THAT PPG MAKES AND ALLOTHER EXPRESS OR IMPLIED WARRANTIES, UNDER STATUTE OR ARISING

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