

FIRETEX® FX7002 INTUMESCENT COATING

APPLICATION MANUAL



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APPLICATION INSTRUCTIONS AND NOTES

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The purpose of this manual is to ensure the correct application of FIRETEX FX7002 intumescent fire resistive material.

For the safe handling and use of FIRETEX products reference must also be made to the current Product Data Sheet and Safety Data Sheets.

FIRETEX FX7002 is fully tested and certified. This information is available to design architects and engineers on request.

The information contained in this application manual is based on independent test data, comprehensive research and field experience, and is considered to be accurate at the time of publication. However, the contents will be subject to revision from time to time due to our policy of continuously improving our products, processes and services.

Only the electronic copy of this manual is a 'controlled document' and all paper versions are 'uncontrolled'. Thus, the user is advised to ensure they have the latest issue of the manual by contacting Sherwin-Williams.

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1.0 INTRODUCTION

FIRETEX FX7002 is a single-component solvent-based acrylic intumescent fire-resistive material designed to provide up to 120 minutes of fire protection to structural steelwork.

1.1 WHAT IS FX7002 AND WHERE IS IT USED?

FIRETEX FX7002 intumescent coating is used to enhance the fire resistance of structural steel members by providing a layer of insulation, which is formed as a result of a chemical reaction initiated by fire. This insulation reduces the rate of heat transfer and extends the time period for which the structural member can resist the weakening effects of the heat.

FIRETEX FX7002 has been designed for cellulosic (ASTM E119/UL 263) fire resistance periods of up to 120 minutes. It has been tested and certified in accordance with a UL263 and is suitable for ASTM E119 specifications. Please consult the relevant product data sheet or Sherwin-Williams for details of certifications.

This manual aims to provide relevant technical information to the applicator of FIRETEX FX7002 intumescent fire resistive material, helping to ensure that the completed project is fit for purpose.

It is the responsibility of the applicator to ensure that all coatings are applied in accordance with the stated guidelines in this procedure. Since product failure could threaten life in an emergency fire situation, applicators must not deviate from these guidelines without written prior agreement from Sherwin-Williams.

1.2 PRODUCT QUALITY ASSURANCE

Sherwin-Williams operates quality systems to ISO 9001:2015 and is a BSI-registered firm. All raw materials are subjected to quality testing before being released for manufacture.

Representative batches of FIRETEX FX7002 are routinely selected from production and subjected to fire testing.

1.3 TECHNICAL SUPPORT

Our specialist teams of engineers, chemists and other industry professionals coordinate the front line technical and sales focus for the FIRETEX FX7002. To support our customers in the field, we have experienced Technical Service teams working in conjunction with a dedicated Fire Research department.

2.0 SURFACE PREPARATION AND PRIMING

2.1 SURFACE PREPARATION

All surfaces to be protected by FIRETEX FX7002 intumescent fire resistive material must be correctly prepared and primed. Surface preparation and application must be carried out in line with 'best industry practice' as indicated in many publications by institutions such as AMPP, formerly NACE, SSPC, ICorr, ISO, etc. The standards of surface preparation contained herein are to be considered minimum requirements. Where other client company specifications or product technical data sheets demand a higher level of preparation, the higher level should be adopted. In all cases, the applicator should obtain and refer to the current primer product data sheet, which is available at sherwin-williams.com/protective

2.2 SURFACE DEFECT REPAIR

All steel surface defects, including weld splatter, cracks, surface laminations and deep pitting, are likely to be detrimental to FIRETEX intumescent coatings and must be removed before surface preparation. All fins, burrs, and sharp edges shall be removed by grinding to a minimum radius 0.08". The integrity of welds must be inspected, as these are often a location where corrosion forms. Undercut welds, blow holes, discontinuous seams, and other defects should be rectified. Uneven welds should be ground smooth to ensure proper adhesion of the system. It is not necessary to grind weld seams flush.

2.3 SURFACE PREPARATION

All steel surfaces must be clean, dry and free from all surface contamination according to

SSPC - SP1, prior to power tool cleaning to a minimum standard of SSPC-SP3. When power tool cleaning has been completed, all dust and arisings must be removed from the cleaned surface by use of a vacuum cleaner, dry oil-free compressed air or brush.

2.4 PRIMING

Primers must be approved, satisfactorily tested and qualified by Sherwin-Williams for use under FIRETEX FX7002.

2.4.1 RECOMMENDED PRIMER

- Please contact your Sherwin-Williams representative for details of qualified materials.

2.5 OVERCOATING OF APPROVED PRIMERS WITH FIRETEX FX7002

Before application of FIRETEX FX7002, ensure the primer to be overcoated is dry and free from all traces of rust, breakdown, and surface contaminants, especially grease and soluble salts.

Areas of breakdown and damage on the primer shall be repaired in accordance with the project specification or primer data sheet.

Ensure that the overcoating time/temperature intervals are in line with the primer manufacturer's product data sheet and the FIRETEX FX7002 primer approval.

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2.6 PRIMER QUERIES

If there are doubts about suitability for overcoating of the primed substrate e.g. unknown primer, excessive primer dry film thickness or contamination, it is essential to contact Sherwin-Williams prior to application of FIRETEX FX7002. Such situations should be treated on a case-by-case basis.

3.0 PRODUCT STORAGE AND HANDLING

Consult relevant Product Health and Safety Data Sheet for information on safe storage, handling and application of FX7002. The most current and up to date safety data sheet for the product being used must be referred to ensure that the latest storage and handling guidance is observed.

For operator safety it is essential that all recommended PPE as detailed in the current FIRETEX FX7002 safety data sheet is worn/used.

3.1 SHELF LIFE

The shelf life of FIRETEX FX7002 – Two years from manufacture date or “Use By” date where specified.

The shelf life of approved primers and topcoats are detailed in the specific product data sheets.

3.2 STORAGE

- Keep away from sources of ignition.
- No smoking
- Open containers should be properly re-sealed and kept upright to prevent spillage.
- Flammable/combustible
- Keep away from heat, sparks and open flame.

4.0 APPLICATION

FIRETEX FX7002 product data sheet contains essential information regarding application parameters and must be read in conjunction with this manual. A copy of the current data sheet can be obtained from Sherwin-Williams.

4.1 RECOMMENDED EQUIPMENT

Spray unit must be capable of maintaining a minimum of 3000 psi spray pressure, while using a HD .X27 tip. It is also possible to use electric or gasoline-powered airless spray pumps.

Use 3/8" (9.53mm) fluid lines and short (typically 6 ft) 1/4" whip end; in-line gun and pump filters should not normally be used. Maximum fluid line should not exceed 106 ft (30 m).

FIRETEX FX7002 typically requires a nozzle/tip size of 21–27' thou (0.53 – 0.58mm), >30° is recommended, but application conditions may require use of alternative tip sizes.

An operating pressure of 3000 psi is suggested, but in all instances, the pressure should be set to the minimum value to allow satisfactory atomization of the FIRETEX FX7002.

4.2 BRUSH APPLICATION

The products are suitable for brush application, but due to the nature of the products, a ribbed appearance may result and as such is generally not recommended for large areas. Application of more than one coat may be necessary to give equivalent dry film thickness of a single spray-applied coat.

4.3 MIXING INSTRUCTIONS

As FIRETEX FX7002 is thixotropic and develops body post-manufacture and filling, it is recommended to stir the materials in the pail to ensure that the product flows into the wet end of the spray pump. By doing so, steady flow and reduction in cavitation are achieved. It is recommended that the material is stirred using a handheld air-powered mixer, typically for a duration of one to two minutes.

4.4 APPLICATION CONDITIONS

FIRETEX FX7002 should be applied at temperatures at or above 41°F. In conditions of high relative humidity, i.e. 80-85%, good ventilation conditions are essential. Substrate temperature shall be at least 5°F above the dew point and always above 41°F.

The application of FIRETEX FX7002 at elevated temperatures may reduce the sag resistance of the product. It is the responsibility of the applicator to determine what thickness of product can successfully be applied at the prevailing ambient conditions.

FIRETEX FX7002 must be protected from moisture during the drying period. Moisture ingress prior to drying may affect the integrity and fire protection properties of the coatings.

4.5 OVERCOATING

No more than two coats by airless spray should be applied within any 24-hour period.

If the maximum recommended thickness per coat is exceeded or high film thicknesses are overcoated prematurely, cracking and/or blistering may occur. This is even more important when high film thicknesses are involved.

Product data sheets will state minimum periods before an intumescent film can be overcoated, however these are guide figures and the experience of the applicator and inspector will also play a key role in deciding when the coating is dry enough to recoat. There will still be a percentage of solvent retained in the film when it is overcoated and will exhibit a somewhat soft film.

4.6 EXTERNAL EXPOSURE

FIRETEX FX7002 is capable of withstanding external exposure without topcoat for up to six months providing:

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The product is allowed to dry for at least 24 hours at 59°F in dry conditions with good air movement and ventilation. These conditions are based on a total dry film thickness of up to 32 mils DFT. The drying time required will be increased if the film thickness is greater than 32 mils DFT.

The substrate temperature is at least 5°F above the dew point at the time of **application** and during the drying period.

The specific use or storage does not lead to ponding or running water due to rainfall, condensation or other site/transportation/storage circumstances.

4.7 SPRAY TECHNIQUES

- Keep overlap areas down to a minimum.
- **Ensure** that gun is aimed directly at steel to avoid dusty finish – even more important when ambient temperatures are raised.
- **Ensure** good ventilation and air movement in confined areas.
- Ensure proper spray gun distance from substrate, pump pressure, and tip sizing to avoid dusty finish texture.
- **Typical application** thickness per coat by airless spray for FX7002;
 - 40 mils dry film thickness DFT
 - 56 mils wet film thickness WFT
- The maximum average applied DFT must not exceed the maximum tested DFT. If this occurs, it will be necessary to abrade or remove to reduce the thickness.
- Refer to the applicable product data sheet for specific maximum dry film thickness.
- Dry spray on the outside surface is usually not detrimental to the performance of the fire protection.
- Dry spray is usually an aesthetic issue only. However, over coating dry spray will likely lead to inter-coat adhesion issues and as such it is strongly recommended to remove or abrade to a smooth finish.

In-shop activities

- Plan the paint shop to have a good layout area (pipe racks).
- Have planned procedures in **application** and handling of completed painted sections to reduce damage.

4.8 RECOMMENDED TOPCOATS

- Only approved topcoats should be applied over FIRETEX FX7002, after ensuring it has been applied at the specified dry film thickness and allowed to dry according to the parameter stated within the product data sheet. In all instances where a topcoat is to be applied over FIRETEX FX7002, the topcoat must be applied according to manufacturer's written instruction on the product data sheet. Please contact your Sherwin-Williams representative for details of qualified materials.

5.0 HANDLING OF COATED STEELWORK

Due to the **application**, loading, transportation and erection of fire-protected steelwork, some form of damage to the sections is inevitable in the form of contact point marks, handling or erection damage. Some of this can be mitigated by the careful placement of “chop blocks”, using nylon lifting straps or lifting eyes, and careful handling of steelwork during transport and erection. Other factors that will affect this are the film thickness applied, the number of coats applied and the length of time that the coating is allowed to dry prior to handling.

6.0 REPAIRS

The repair procedure must be carried out as soon as possible to prevent further damage and moisture ingress. Please refer to Specification Selector document FPM2 for FX7002 series for further details of remedial specifications.

6.1 AREAS OF REPAIR

While it is best practice to repair all areas of damage, if the area of damage is 0.72 in², equivalent to a quarter coin, in a 94in² area, the size of a “Letter” sheet of paper, it may not be necessary for this section to be repaired, unless aesthetically displeasing.

For areas greater than this quarter coin, it is required that FX7002 is used as in the original specification, please refer to the repair clause 7.2.

6.2 REPAIR METHODS

All surfaces to be coated shall be prepared in accordance with the guidance given in the product's data sheet or application manual.

Where the damage has exposed the substrate, the affected area should be prepared in accordance with the guidance given in the surface preparation clause of this manual.

The topcoat shall be removed in areas where new FIRETEX FX7002 will be applied over the existing (intact) coating system.

Damaged FIRETEX F7002 shall be removed until a firm edge is achieved. Where the existing coatings will be overcoated as part of the repair, these should be abraded to ensure good adhesion of the subsequent coats.

When applying FX7002 to the repair area, follow the application and usage information provided in the Product Data Sheet and this application manual. Care shall be taken to ensure that the area of repair satisfies the specified DFT for the structural member under repair.

If specified, topcoat can then be applied to the finished Intumescent repair.

ATTENTION: Where there is damage to the coating greater than a quarter coin in size, it is essential repairs are carried out to ensure coating integrity, durability and fire performance.

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7.0 QUALITY OF FINISH

BASIC FINISH:

Used where steel is exposed, but aesthetic finish is not a critical concern. Product is installed to meet the thickness requirements of the specification for the prescribed rating with minimal treatment to smooth or mitigate appearance. The product should generally be level and free from major defect.

FEATURE ELEMENTS NOT IN CLOSE VIEW

Items where the observer is usually 20 feet or more from the element. The product should generally be level and free from major defect. Final coat should have a uniform smooth to textured finish, or stippled appearance, when observed from 20 feet or more.

FEATURE ITEMS IN CLOSE VIEW

These items are generally located within 20 feet of the viewing public. The intumescent coating should generally be uniform and free from major defects. Texture or defects may still be noticeable when observed from six feet or less.

SHOWCASE ELEMENTS

These items are a critical aesthetic feature (within six feet or less of view) and due to proximity, shape, topcoat sheen levels, and/or reflection of lighting, requires the highest possible degree of finish. Items should be smooth, and the finish should be even with no waviness or defect and mirror the shape of the expressed steel.

When agreeing to a Feature or Showcase standard of finish, the specifier and contractor should take account of the effects of steel size, section shape, design complexity and the required period of fire resistance.

In all cases, the expected standard of finish should be agreed between all interested parties before application of FIRETEX FX7002 commences.

8.0 DRY FILM THICKNESS MEASUREMENT PROCEDURES GUIDANCE NOTES.

8.1 CALIBRATION

In accordance with ISO 2808:2001, calibration of the DFT gauge should be carried out following the manufacturer's instructions using a smooth plate (similar in composition to the substrate being measured) at least 1.2mm (0.047 inches) thick. The calibration should be checked using shims of known thickness above and below the expected DFT.

BS EN ISO 2808:2001 refers to a figure of 1 mil as a correction factor for blast profile. It is intended to use this correction factor for measurements of all coating thicknesses above 2 mils nominal.

Calibration checks should be performed prior to carrying out measurements, in the environment in which the measurements are to be taken. During a series of measurements, the calibration should be rechecked regularly.

8.2 FX7002 FILM THICKNESS ACCEPTANCE CRITERIA

For both shop and field application of FIRETEX FX7002, dry film thickness is to be recorded and confirmed using the criteria stated in either AWCI Technical Manual 12B, or in SSPC-PA2. Details of the DFT measurement methodology shall be agreed by relevant parties on the project prior to commencement.

When measuring intumescent fire protected steelwork, the mean must not exceed the maximum fire tested thickness for that type and orientation/use/geometry of section. See section 4 of this manual for specific details.

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THE SHERWIN-WILLIAMS DIFFERENCE

The industry experts at Sherwin-Williams Protective & Marine are renowned authorities in their respective fields of knowledge — including Bridge & Highway, Fire Protection, Flooring, Food & Beverage, Freight Rail, Marine, Oil & Gas, Pharmaceutical, Power Generation, Steel Fabrication and Water & Wastewater. Our global technology expertise in areas including tank linings, passive fire protection, corrosion under insulation (CUI) testing and fusion-bonded epoxy drives game-changing innovation and influences global industry standards.



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