

# FIRETEX FX2003 DATA SHEET

## PRODUCT DESCRIPTION:

Firetex FX2003 is a specialist third generation thoroughly tested and certified thin film intumescent coating for the protection of steel against heat induced structural failure for periods typically in the 30 – 60-minute range, but up to 2 hours fire rating (120 FRR).

Firetex FX2003 is fast drying and designed for shop or site application by airless spray, achieving 2-hour protection to qualifying structural steel in 1 to 4 coats.

## PRODUCT APPROVALS & ENDORSEMENTS:

- Certifire Certificate CF5077 – 30 to 120 FRR
- This product has been tested and assessed in accordance with the ASFP fire testing protocol for cellular beam protection. See Section 6.3 from ASFP “Yellow Book” 4th Edition.
- Independently tested and certified by Warrington Fire Research Centre for fire protection of steel requiring certification to BS 476 Part 21:1987 and equivalent standards for periods up to 2 hours.
- Meets the specific requirements contained in relevant sections of the NZ Building Code

## PRODUCT CHARACTERISTICS:

**Volume Solids** 75 ± 4% (ASTM-D2697-03)  
**Colour Availability** White  
**Flash Point** 2°C  
**VOC**

- 272 gms/litre determined practically in accordance with UK Regulations PG6/23
- 351 gms/litre calculated from formulation, to satisfy EC Solvent Emissions Directive
- 266 gms/kilo content by weight from formulation, to satisfy EC Solvent Emissions Directive

<b>Coating Type</b>	Solvent-Based Intumescent Coating
<b>Packaging</b>	20 litre - Single component
<b>Gloss</b>	Flat
<b>Density</b>	1.32 kg per litre
<b>Shelf Life</b>	2 years*

\*Store under cool, dry conditions; protect from frost

## RECOMMENDED THICKNESS:

See separate Firetex Loading Schedule\* for FX2003 loading requirements.

\*Schedules are based on project specific structural design & rating requirements

## APPLICATION RATES:

Theoretical Spreading Rate

- 7.5 sq metres per litre at 100 microns DFT
- 1.5 sq metres per litre at 500 microns DFT

Allow for application losses to determine consumption rates

## Recommended Film Thickness Per Coat:

133-1075 microns wet to attain 100-800 microns dry

## Average Dry Times (50% RH; 300 microns DFT):

	15°C	25°C
Touch Dry	30 mins	20 mins
To Recoat with FX2003	6 hours	4 hours
To Seal / Topcoat	24 hours	16 hours

To Handle: This will depend on the total thickness of FIRETEX FX2003 to be applied.

These figures are given as a guide only. Factors such as air movement and humidity must also be considered. (Typically, not overcoated until adequate cure has been achieved to complete Dry Film Build readings / QA, usually after a Shore D hardness of 40 is achieved)

## WEATHER EXPOSURE:

Firetex FX2003 is for interior exposures only. It should not be exposed to moisture at any stage of its installation / cure – avoid weather where condensation is likely to form, avoid open situations where windblown rain may damage the film. and do not apply waterborne coatings directly to Firetex FX2003.

Avoid water pooling around the base of columns – water may wick up the partially cured Firetex. Avoid airborne salt contamination.

To mitigate the risk of moisture ingress, application of [Altex Pro~Seal Intumescent Seal Coat](#) is highly recommended.

Please refer to the Firetex Coating System Guideline document for further details on application, cure and sealing of Firetex FX2003

## APPROVED PRIMERS:

<b>Carboguard 859 EZ2*</b>	<b>Resene Armourzinc 125*</b>
<b>Carbozinc 858*</b>	<b>Resene Armourcote 210</b>
<b>Carboguard 504</b>	<b>High Build Rust Barrier</b>
<b>Carboguard 635</b>	
<b>*Recommend application of Carboguard 635 to seal</b>	

Refer to the latest Systems Selector for a more comprehensive list of approved primers. Primers, other than those listed may not be used without the express approval of Altex Coatings Ltd.

## APPROVED TOPCOATS:

Not suitable for exterior exposures

For interior exposures, we recommend application in all instances of [Altex Pro~Seal](#). Firetex FX2003 may be finish coated once a Shore D Hardness of 50 is achieved.

- The following coatings are approved as finish coats:

<b>Carbothane 134 HG</b>	<b>Resene Enamacryl Gloss*</b>
<b>Carbothane 133 LH</b>	<b>Resene Lustacryl S/Gloss*</b>
<b>E~Line 379*</b>	<b>ReseneSpacecote LowSheen*</b>
<b>E~Line 949</b>	<b>Resene Decorator Finish*</b>
<b>Isotal enamel</b>	<b>*Require sealing with Altex Pro~Seal before application</b>
<b>Chem~Bar 900</b>	

Do not apply waterborne coatings directly to Firetex FX2003. Refer to the latest Systems Selector for a more comprehensive list of approved finish coats.

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## LIMITATIONS:

**Maximum service temperature:** 70°C.

Note- Temperatures greater than 40°C thermoplasticity may be observed.

**Finish coat colours:** should always be selected from the pastel options – those with high reflectance values to prevent excess heat build-up and reduce the risks of heat distortion and / or blistering.

## SURFACE PREPARATION:

- **For interior exposures:** SSPC SP6 (AS 1627.4 Sa2) as a minimum, SSPC SP10 is the preferred standard of cleanliness.
- **For small internal areas:** (spot repairs) powertool cleaning to SSPC SP3 is acceptable.

**“Wire buff and shop primer” methodologies are not acceptable for fire rated systems.**

Apply one of the approved primers to the prepared substrate. Aged primers which have oxidised must be abraded and cleaned before Firetex may be applied, zinc coatings must be abraded to remove any zinc salts, and any mechanical / weld damage must be repaired in accordance with the Product Data Sheet of the relevant primer.

## APPLICATION EQUIPMENT:

**Brush/Roller, Airless Spray**

Recommended Application Method: Airless spray

60:1, Graco King, Graco Mark V or equivalent. Use 3/8” ID fluid lines where lengths in excess of 3 metres (10 feet) are required.

Maximum length of fluid line should not exceed 60 metres. **Note- it may be necessary to use a 60-mesh pump filter to prevent tip blockages when using tip sizes less than 0.025”.**

**Nozzle Size:** 0.019-0.02 depending on application requirements.

**Fan Angle:** 40°

**Pressure:** 3000 psi

For use on narrow sections the smallest tip recommended is 0.021” (0.53mm) with a 60-mesh pump filter.

## MIXING:

Use mechanical agitation for proper mixing to ensure homogeneous condition. Stir until thoroughly mixed.

## APPLICATION CONDITIONS:

In conditions of high relative humidity good ventilation conditions are essential.

**Substrate temperature should be minimum 5°C and always at least 3°C above the dew point**

At application temperatures below 10°C, drying times will be significantly extended, and spraying characteristics may be impaired.

Protect all surfaces from moisture, as moisture ingress may damage the coating and its intumescent qualities.

## APPLICATION:

In optimum conditions, >24°C Day/15°C Night temps, no more than 2 spray applied coats (max 1,075µm WFT/coat) may be applied in any 24-hour period.

For heavier film builds optimal cure will be achieved by applying multiple coats. e.g: 2 coats of 530 – 660µm WFT per day (4-500µm DFT per coat)

Extended overcoating times may be required at low temperatures and/or high film thicknesses.

If the maximum recommended thickness per coat is exceeded or high film thicknesses are overcoated prematurely, cracking may occur, along with solvent entrapment & associated blistering.

## THINNING:

Recommended thinner/cleaner Altex Thinning Solvent #10

Thinning is not normally required or desired; however, if conditions dictate, up to 10% Thinning Solvent #10 may be added. **Note: Excessive thinning can cause low film thickness, sagging, extended dry time and other film defects.**

## ADDITIONAL NOTES:

The DFT specifications quoted are mean values, measurements should be taken for I-sections to the following recommendations:

- Web-2 per 100cm length
- Flange-(upper, lower, inside and outside) – 1 per 100cm length.

(Refer ASFP TGD11 for full details)

For further information refer to Altex Coatings Technical Services Department.

## MAINTENANCE/REPAIRS:

- Powertool clean to SSPC SP3 (AS1627.2 St3) all mechanical & weld burn damage. Feather edges to a clean, sound bevelled edge. Sand adjacent coatings to a matt finish. Dedust.
- Spot prime the prepared surface with the original specified primer/s.
- Spot coat with Firetex FX2003 to ensure the coating matches the thickness of the surrounding system. Seal and topcoat in accordance with the original specification, gradually overlapping the aged coatings.

## DISCLAIMER:

The information in this datasheet is provided as a guide only and is provided without warranty, implied or otherwise. It is your responsibility to determine the suitability of any information or product for the use contemplated. Conditions of use, application and the substrate are beyond our control so no liability whatsoever (whether as to coverage, performance, injury or otherwise) is accepted for the information contained herein.

Data sheets may change from time to time and it is your responsibility to ensure you have the latest product datasheet and material safety data sheet from your supplier. Check the data sheet date with the listings at [altexcoatings.com](http://altexcoatings.com). Altex Terms and Conditions of Trade, available at [altexcoatings.com](http://altexcoatings.com), apply in respect of all coating products and materials supplied, including samples.

## INTRODUCTION

An Intumescent coating system is comprised of:

- Primer  
(or possibly two primers)
- The Intumescent
- A seal coat
- Finish coat/s

These four components are specified in systems that are designed to protect structural steel in internal exposures to a C2 Classification, as described in ASNZ2312.1.2014 while providing Fire Ratings typically in the 30 – 60-minute range, and up to 120 minutes.

# Firetex Coating System Guidelines V3

There are two documents that relate to the application of Intumescent coatings along with protective coatings:

- 1. The coating Specification.** This outlines the surface preparation and coating sequence from the primer to the finish coat. It dictates the surface preparation and the coatings to be used, the thicknesses of the primer/seal/ and finish coats & other relevant information.
- 2. The Intumescent Schedule.** This document addresses the thickness of the Firetex (or other intumescent) for each steel member to be rated. The Intumescent is applied at varying thicknesses depending on the size and configuration of the individual steel sections (Hp/A) and the Fire Rating required. (number of minutes the intumescent must protect the steel for).

## Preparation & Priming

The structural steel is abrasive blasted to a near white metal standard, (SSPC SP10 / AS1627.4 Sa2½ standard of cleanliness). The primer/s are applied in the workshop environment. Subsequent coatings (intumescent, seal and finish coats) are normally applied on-site, post erection of the structural steel and before significant construction interferes with application.

Spot repairs to mechanical or weld related damage must be completed before the intumescent coating may be applied. (reinstating the specified primer/s). Any oxidised surfaces, or those exhibiting zinc salts must be abraded to remove the contaminant before overcoating.

Reference to the Altex System Selector Charts will clearly show that there are a limited number of approved primers that may be applied to the steel prior to the Firetex. Using a coating that is not on the approved list creates a potential problem that may prove very expensive to remedy. Using an unproven coating may also lead to catastrophic failure of the intumescent coating, potentially leading to loss of life.

A common misunderstanding within the industry is that “wire buffed” steel, coated with an alkyd shop primer, is an acceptable priming system for intumescents. This is incorrect – there are a select few approved primers.

Another misunderstanding is that a powertool clean is adequate surface preparation for intumescent systems. Theoretically, yes, an SP3 preparation is acceptable, however, very few workshops will achieve a genuine SP3 Powertool clean – a time consuming and laborious process. In all instances abrasive blasting is the preferred standard of preparation.

An alternative approach, where the coating system is applied in a workshop and delivered on-site in a completed state, is sometimes employed, but this will require extensive spot repairs to mechanical/weld damage once erection of the steel is complete. It also tends to create bottlenecks in the workshop operation.

Prior to application of any intumescent, the thickness of the existing primer must be established and recorded. The combined total DFT of primer coats should not exceed an average of 150µms DFT. Establishing an accurate base reading is important when it comes to inspections of the Firetex to ensure that the Firetex is applied to the scheduled thickness, over and above the primer/s DFT.

## Equipment

It is recommended that an airless spray unit be employed to apply the Firetex. Use a 56:1 or 68:1 Graco King or equivalent.

- Airless Spray Nozzle Size: 21 – 27 thou (0.53 – 0.69mm) depending on application requirements.
- Fan Angle: 30°
- Operating Pressure: 210kg/cm<sup>2</sup> (3000 psi)
- Use 3/8" (9.53mm) ID fluid lines where lengths in excess of 3 metres are required. In-line gun or pump filters should not normally be used.

The details of airless spray tip orifice size, fan angle and pressure are given as a guide.

Smaller fan angles should be used where the size of the work to be sprayed makes this appropriate.

It may be found that slight variation in tip orifice size or pressure will provide optimum atomisation in some circumstances.

In general, the operating pressure should be the lowest possible consistent with satisfactory atomisation.

Maximum length of fluid line should not exceed 60 metres as a loss of pressure and poor atomisation will occur.

For use on narrow web sections, the smallest tip recommended is a 21 thou (0.53mm) with a 60-mesh pump filter.

## Application:

Firetex FX2003 must be applied in successive layers to achieve the desired film build. The primary considerations regarding application are:

- A single coat should not exceed 1,100µms WFT to achieve 800µms DFT.
- A maximum of TWO coats may be applied in a 24-hour period when ambient temperatures are in the 20-25°C range (day) and 15+°C (night).
- In most environments two coats of 4-500µms DFT (530-660µms WFT), applied in one day will achieve a faster cure than a single, heavy coat applied at 1,100µms WFT.

## Cure & Sealing:

The Firetex FX2003 must cure adequately to permit Dry Film Thickness readings to be taken – this Inspection/QA will determine whether the Fire Rating has been achieved. This is completed using an Electronic Gauge, described in SSPC PA2 & ASTM D7091 as "Type 2" gauges. Commonly used brands in NZ and Australia are Elcometre® and Positector®. In all instances, the DFT readings taken must account for the average Dry Film Thickness of the primer/s that were applied prior to the Firetex. It is important to ensure that inspection data for the primer/s is available before the Firetex is applied. We recommend reference to the ASFP Technical Guidance Document TGD-11 for application and inspection guidelines.

If the coating thicknesses are below the scheduled requirement, then additional Firetex must be applied, allowed to cure, and be re-checked to ensure compliance with the schedule. Once the applied Firetex FX2003 achieves the Scheduled Dry Film Thickness, then the seal coat – Altex Pro-Seal Intumescent Seal Coat may be applied. The seal coat is a specialised coating that permits ongoing cure of the intumescent, while enhancing weatherability, especially against ponding, pooling and condensation during intermediate outside storage, transport, dwell time in laydown areas prior construction and during the construction phase.

## IMPORTANT TIPS

Temperatures will have a dramatic effect on the cure rate, and may result in delays to the coating sequence:

- In low temperatures – less than 15°C (night) application may be limited to a single coat per day.
- Excessive film build (those exceeding the above guidelines) or too little cure time between coats will slow down cure dramatically.
- Good ventilation, even in cold temperatures is extremely important to facilitate cure.

Other application related aspects are:

- Firetex FX2003 requires thorough power stirring to ensure a smooth and homogenous mix.
- Judicious thinning with Altex Thinning Solvent #10 may be required to enhance application. (Caution: excessive thinning will compromise film build characteristics.)
- Relative humidity must be below 85%, and the steel temperature must be 3°C higher than the dew point.
- Good ventilation is critical.

Even when the steel is to be hidden from view within wall or ceiling cavities, (and therefore is not being finish coated) it is still recommended that the seal coat be applied. This is however optional. Often there is a risk of moisture ingress (incomplete weather tightness), and there is also the risk of condensation forming if the dew point is reached. Altex Pro~Seal Intumescent Seal Coat is designed as a water barrier and will enhance weatherability of the intumescent.

**Exposure of Firetex FX2003 to any moisture is to be avoided, and it is imperative to avoid pooling of water on horizontal surfaces, or exposure to even light rainfall, condensation and salt laden winds.**

Altex Pro~Seal also promotes removal of solvents from the Firetex. Once hard cure of the coating system (primer / Firetex / Pro~Seal) is complete, (achieving a hardness rating of Shore D50) then the finish coat/s may be applied.

The chart below demonstrates the process & time required for workshop application of an FX2003 intumescent system – and is based on a 1,000µm DFT build of Firetex and **assumes both maximum output with minimum delay and good cure conditions.**

- ➔ Low temperatures or overbuilding will result in at least a day's delay between seal coating & finish coating.
- ➔ Failure to achieve the required DFT on Day 2 will result in at least a day's delay on Day 3 as an additional coat of Firetex will need to be applied.
- ➔ Builds exceeding two coats of 500µms per day will require an additional day's cure.

INTERIOR EXPOSURE					
	Day 1	Day 2	Day 3	Day 4	Day 5
AM	SP10	FX2003	Cure time	Pro~Seal Intumescent Seal Coat	Cure (shop applied)
PM	CG 635	FX2003	QA/DFT	Carbothane 134	

It is common for a coat of Epoxy Zinc (Carbozinc 859EZ2) to be applied to all structural steel within a building. It is highly recommended that an epoxy primer (Carboguard 635 or 504) be applied prior to the Intumescent coating. This eliminates the risk of any zinc salts reaction with the intumescent coating.

### Finish Coating:

There are several aspects when finish coating that need to be considered as they can affect overall performance of the coating system and that of the underlying intumescent coating.

- Colour: When dark colours are applied in these systems, and then exposed to strong sunlight, via windows, atrium etc, the film will heat up very quickly. If there are any solvent residues

within the film, then blistering may occur as the liquid solvent evaporates into a gas, creating a bubble in the film. Lighter colours reduce this risk considerably. Reference to the Resene Colour cards will provide information on light reflectivity – meaning cooler colours.

Application of Altex Pro~Seal to ensure full hard cure is achieved before finish coating will virtually eliminate this risk.

### Other Considerations/Limitations:

- **Temperatures:** Exposing the Intumescent system to high temperatures (>70°C) will damage the film permanently. Again, selection of a highly light reflective colour is important in most situations.
- **Thermoplasticity:** Firetex FX2003 is a thermoplastic coating. Temperatures above 40°C will result in some softening of the coating.
- **WB Coatings:** Firetex is susceptible to moisture. Waterborne coatings have the potential to damage the intumescent properties of the Firetex. Therefore, application of Pro~Seal is important to prevent moisture ingress into the intumescent coating.
- **Moisture:** With site application of Firetex, leaving the film exposed, without seal / finish coats will leave the intumescent coating exposed to dew, condensation, rain and/or excessive humidity. This exposure will severely damage the coating in a very short time.
- **Salts:** Airborne salts will result in moisture on the film and will likely also compromise adhesion of the subsequent coating.
- **Solvents:** Solvents from various finish coats will soak into the intumescent film, and once the finish coat is lacquer dried it will create a seal that slows the solvents from leaving the film. Again, seal coating will prevent this from occurring.