

*Technical document: TD-023, English translation*

## **FIRESTOP Wood X-MART CC Application Manual**

### **I Obligatory References**

**1.1. Prior to use of FIRESTOP Wood X-MART CC expanding fireproof coating, it is necessary to read the instructions in this TD. Producer assumes no liability for damages caused by inadequate use of products and non-compliance with these instructions. Prior to use of the FIRESTOP Wood X-MART CC, due to the specific characteristics and the coating function, it is recommended to consult the producer, ie. customer training, in order to ensure proper use and functionality of the coating, as well as the desired appearance of treated surfaces.**

1.2. Definitions of terms: producer, customer, fire-proof coating are given in section 1.2. of Technical document TD-022. Instructions in this TD can be changed in time due to technological improvement of the product. These changes will be noted and issued in amendments of this TD.

1.3. Additional data are available on reasonable request.

1.4. FIRESTOP Wood X-MART CC is coating for indoor use and it is intended for the protection of wooden elements in the interior..

### **II Base and Surface Preparation**

#### **2.1. Preparation:**

**General:**

Surface preparation consists of grease and dirt removal with appropriate agents. FIRESTOP Wood X-MART CC is applied to a clean and dry surface. Depending on the type of wood, function of elements that are coated and the aesthetic effect that wants to be achieved, sanding of the wood (with sandpaper of appropriate granulation, usually 120-180) is recommended before coating application.

**Wood:**

FIRESTOP Wood X-MART CC is applied directly to previously prepared wooden surface. The use of primer is not always obligatory in FIRESTOP system. Priming is recommended for the preparation and additional impregnation of wood, reduction of intumescent coatings consumption or in the case of high esthetic demands and for covering of small irregularities on wooden surfaces, as a base for the FIRESTOP Wood X-MART CC coating. Wood preparation prior to first coating should be in accordance with recommendations for the base coating given in the manufacturer's specification. FIRESTOP Wood X-MART CC should be applied onto a compatible base coating. We recommend:

**PRIMTEC Wood, acrylic primer**

Other primers can also be acceptable. Fireproof coating may be applied after drying (usually 24 hours). For more information, contact FIRESTOP Internacional technical service. FIRESTOP Wood X-MART CC should not be applied over surfaces coated with synthetic primers and topcoats or other similar coatings. For advice, contact FIRESTOP Internacional technical service.

### **III Tools**

**Mixer:**

Use 1/2" boring machine with an average or instantaneous mixer.

**Pumps – airless spray gun:**

- Working pressure / 1450-1750 psi (102-122 kg/cm<sup>2</sup>)
- Pumping ratio / minimum\* 50:1 (\*teflon packages are recommended)
- Tip size / 19-23
- Fan angle / 10-40 degrees (depending on the sprayed part)
- Hose diameter / 10 mm (inner diameter 3/8")
- Hose length / maximum 60 meters

**Spray guns:**

We recommend

Mfg	Model
Graco	205 591
Silver	208 663

**Brush and Roller:**

For application with brush and roller, ensure a continuous coat to avoid thick brush finishing. Use of a small hairy fabric roller will produce a light and lasting final layer.

Maximum wet film per layer when applied with a roller or brush is 0.51 mm. These recommendations should be in compliance with tools producer recommendations.

**IV Mixing and Thinning**

FIRESTOP wood X-MART CC is delivered as a two-component coating. It is prepared for use by necessary mixing and homogenization of components individually, and then by mixing in the recommended mass ratio: comp. A: comp. B = 1.8: 1, without further dilution. If thinning is required, it is made with an addition of maximum 3%-5% Demi water.

**V Application Conditions**

**5.1. Temperature and atmospheric conditions**

It is recommended to apply and use FIRESTOP Wood X-MART CC onto dry and protected wooden elements. Air temperature should be min 5°C. Relative air humidity should be below 80% for a successful application.

Conditions	Base	Ambience	Humidity
Normal	15°C - 29°C	15°C - 29°C	0 - 80%
Minimum	5°C	5°C	0%
Maximum	32°C	40°C	80%

Spraying of intumescent coating is not recommended if wind speed exceeds 5 m/s due to the large dispersal or material consumption.

If FIRESTOP Wood X-MART CC is wetted, it may be damaged, film blurring and bubbles may occur, and the surface may be wrinkled. Because of that FIRESTOP Wood X-MART CC should be protected from excessive humidity during application. FIRESTOP Wood X-MART CC is intended for indoor use only and must not be exposed to adverse weather conditions (even when it is over coated with top coat). Impact of precipitations and humidity usually causes damages that cannot be repaired and requires the removal of intumescent coatings from the entire surface and the application of a new coatings.

**5.2. Protection of Surrounding Surfaces**

Finished surfaces should be protected from damage and repeated spraying. In the event of a rainfall during open-air work, beams and columns can be covered with PVC foil or similar material.

## VI Application Procedure

### **Pumps – Airless Spray Gun:**

An individual layer consisting of several coatings applied in swift moves enables better control of quantities, thickness and the final layer. The maximum thickness of wet FIRESTOP Wood X-MART CC - WFT (wet film thickness) is 0.8 mm. In certain cases, application of two thinner layers instead one thicker is recommended. In good weather conditions (21°C) and at air circulation exceeding 2 m/s, it is possible to apply two layers per day. In any case, it must be made sure the first layer is dry.

### **Brush/Roller:**

For application with brush, the brush has to be filled to the top. The stroke technique should be such to reduce brush marks. A short hairy roller can be used, but this will effect the look of final layer. The maximum wet film per layer when the application is with roller or brush is 0.51 mm.

### **Application Ratios:**

At the ambience temperature of 21°C, the following ratios may be used per coating:

Method	Maximum filling
Airless spray	800 µm WFT*
Brush/roller	510 µm WFT*

\*WFT – wet film thickness

Finished surfaces should be protected from damage and repeated spraying.

### **Special recommendation:**

Organized training by qualified persons from FIRESTOP Internacional technical service is recommended to the contractors who are inexperienced in application of fireproof coating.

## VII Drying Time

Drying period depends on several factors:

- Temperature
- Air circulation
- Humidity
- FIRESTOP Wood X-MART CC thickness
- Application method.

Great humidity, poor air circulation or low temperatures may cause prolongation of drying time and poor adhesion. The drying time of the coating layer in normal conditions is 48-72 h.

The following is to be mentioned as it affects the drying time:

- Drying time of the coating is prolonged by approx. 20% if coating is done with the roller or brush (in comparison to the application with airless spray or compressor gun).
- Minimum drying time of the last layer prior to top coating is 72 hours.
- Drying time doubles at the temperature of 5°C or at air humidity exceeding 75%.

## VIII Measurement of Coating Thickness

### **8.1. Measurement of Coating Thickness during Application**

When applying the coating, wet film thickness should be checked with a thickness gauge. It is used by inserting teeth into the wet coating. The last teeth with a coating on it, shows the thickness.

Prior to the further application, film thickness should be checked by using the electronic dry film gauge. The top coat should not be applied until the appropriate thickness of FIRESTOP Wood X-MART CC is applied.

It is important to ensure that the wet film is thick enough to obtain the desired film thickness after drying.

During the drying process, the coating will shrink as a result of water evaporation. The following formula can be used to calculate the desired thickness of wet film:

$$\text{WFT}^* = \text{DFT}^*/\text{SOLID MATERIAL CONTENT (70)} \times (100)$$

\*WFT – wet film thickness DFT - dry film thickness

Dry film thickness measurement can be performed as soon as the coating is hard enough to enable reading without furrowing it.

### 8.2. Measurement (Gauging) of Final Coating Thickness

Dry film thickness (DFT) can be measured with gauging equipment (measuring device for dry film thickness on wood).

Measurement of the final coating thickness is made when the coating is hard enough to perform gauging without furrowing the surface.

The top decorative coating should not be applied until measured values of fireproof coating thickness are in line with the prescribed thickness.

### 8.3. Practical Thicknesses and Consumption

Practical coating thickness depends on desired protection period and types of wood surfaces that are protected (wooden beams, boards or other wooden elements).

<i>Fire resistance time</i>	<i>Coating thickness, μm</i>	<i>Consumption per m<sup>2</sup>, kg</i>
<b>30 min</b>	450	0,81
<b>60 min</b>	750	1,35

Practical consumption showed in previous table is increased for technology dispersal which calculates the consumer - the client, based on his equipment, application techniques and other conditions.

## IX Top Coat Application

When fireproof FIRESTOP Wood X-MART CC coating is applied in the required DFT (dry film thickness) and when it is completely dry, a top decorative coat may be applied. We recommend:

**TINTO color CENTURION W100 CC, synthetic clear varnish.**

FIRESTOP Wood X-MART CC is intended for indoor use only and must not be left exposed to the atmospheric impacts.

## X Maintenance and Cleaning

### 10.1. Maintenance and reparation

Damaged parts should be scraped off or rubbed down. Approx. 2.5 cm of the finishing coat around the damaged spot should be removed. The surface has to be clean and dry prior to FIRESTOP Wood X-MART CC is applied again. The primer is to be applied in the original thickness, and it has to be dry before the final layer is applied. Minor damages (scratches, , chips, etc.) can be repaired by additional application of intumescent coating with minimal effect on the appearance of the final layer.

Greater damage requires grinding of damaged layers and re-application of the coating system. Grinding of fire protective coating does not affect its functionality, but it causes blurring, loss of transparency and consequently, the appearance of a dry film, which should be considered due to the aesthetic characteristic of the coating.

Reparation is usually done by brush, and in cases of greater damages other application tools can be used (according to section III of this TD).

## 10.2. Cleaning

**Cleaning:** the pump, mixer and hose should be washed with water at least each 4 hours at 21°C and more frequently if the temperature is higher.

**Cleaning due to inadequate handling:** Spilled coating should be cleaned with an absorbent material. Brushes and equipment should be washed out with water and detergent immediately after use. Waste handling and environment protection in accordance with regulations are responsibility of the customer and contractor.

## XI Conclusion

To our best knowledge, technical data contained herein are true and accurate as of the day of publishing and may not be modified without prior notification.

### 11.1. Producer liability

Producer is liable for claim that its product fire resistance is tested in accordance with valid Serbian and EN standards by certified institutes and published in certification document TD-009. Technical data contained herein (and in our other technical documents, internal standards and recommendations) are true and they can be checked only according to methods mentioned in these documents. No other warranty and liability are implied.

### 11.2. Trademark

FIRESTOP WOOD X-MART CC is a trademark of our company, legally protected in Serbian Intellectual Property Office. It is within a proprietary programme: FIRESTOP - expanding fireproof coatings – state of the art protection of steel and wooden structures: registration No. 4117, report No. A-727/08/01 and registered trademark (signet) No. 57833 shown, in the header of this document.

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## XIII Signature



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