CHAR 21

FIRE PROTECTION FOR STEEL AND CONCRETE STRUCTURES

BTECH building technology

PRODUCT SHEET

DESCRIPTION

CHAR 21 is a high-performance water-based intumescent coating with extremely low VOC content. It provides an effective fire barrier thanks to its high content of active solids, robust intumescent foam, and the use of nanofillers. The rapid development of a stable carbonaceous foam with low thermal conductivity ensures effective protection of both combustible and non-combustible substrates.

FIELDS OF APPLICATION

- Fire protection of steel, concrete and reinforced concrete structures.
- Fire protection of compartmentation masonry (brick or concrete).
- Suitable for structural fire resistance applications up to 120 minutes.
- Applicable in a wide range of civil and industrial environments.

TECHNICAL DATA

Density	1.3 ± 0.05 kg/dm^3 at 20°C
Solid content	78% ±5% w/w – 67% ±5% v/v
Colour	White
Standard packaging	20 kg plastic pails
Shelf life	12 months in original sealed packaging
Spreading rate	0.55 ± 0.05 mm DFT with 1 kg/m^2 wet (theoretical)
Application	Airless spray; brush/roller for small areas and touch-ups
Wet film thickness per coat	Airless: max 1300 μm (750 μm DFT) Brush/roller: max 500 μm (300 μm DFT)
Dilution	Not recommended; if needed water max 5%
Drying time	8 h touch-dry / 24 h full dry @ 20°C, 60% RH

INTUMESCENCE

Intumescence refers to swelling during carbonisation. When temperature exceeds 200°C, special chemical components generate a low-density foam expanding up to 100 times the dry film thickness, forming an efficient thermal barrier that protects the substrate.

FIRE SAFETY FUNCTION

Structural fire resistance is essential for safety. In commercial and industrial buildings, hotels, airports, supermarkets, schools, hospitals, cinemas, theatres and multi-storey car parks, intumescent coatings prolong structural integrity during a fire, preserving human life, protecting property and enabling safe evacuation and fire-fighting operations.

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P R O D U C T S H E E T

APPLICATION

SUBSTRATE PREPARATION

Substrate preparation must be adequate depending on conditions, including cleaning, degreasing and removal of loose particles.
Steel surfaces are typically blast-cleaned to SA 2½ before applying an anticorrosive primer.
Airless spray application is usually performed in at least two coats, applied wet-on-wet.

PRODUCT APPLICATION

A typical application of 1.5 mm dry film = 2.7 kg/m² wet is achieved in two coats of approx. 1 mm wet film each. Recommended equipment: piston airless pump with minimum 40:1 compression ratio, minimum 150 bar pressure (e.g., GRACO MARK V, WAGNER ProSpray PS34), self-cleaning Reverse-A-Clean tip, nozzle size 45–50 mils (~1 mm), 3/8" hose up to 30 m. Typical flow rate 3–6 L/min. Gun, line and feed filters should be removed.

Application by brush or roller is possible but requires additional coats. Adequate environmental conditions must be maintained during application and drying.

RECOMMENDED PRIMERS AND TOPCOATS

Eposol Primer 100: Two-component epoxy primer for steel, stainless steel, aluminium and non-ferrous metals.
Primer 036: Fast-drying phenolic-modified alkyd primer for steel and galvanised steel.
Wall Primer 3500: Primer for concrete and masonry.

Many other commercially available primers have been tested and found compatible. CHAR 21 is compatible with alkyd and epoxy systems.
A finishing coat may be beneficial to improve aesthetics and reduce dirt pick-up. Intumescent paints are not suitable under condensation or rain; therefore, in humid or outdoor environments a suitable water-barrier topcoat is required.

- Indoor (ETAG 018 classes Z1–Z2): no topcoat generally required.
- Semi-exposed (class Y): apply IDROSOL water-based acrylic topcoat.
- Fully exposed outdoor or corrosion class C3 (ISO 12944): apply PURETHAN solvent-based polyurethane topcoat, applied with care.

CERTIFICATIONS & APPROVALS

CHAR 21 is available with European certification and multiple approvals.

- Steel structures: tested according to EN 13381-4; classification per EN 13501-2.
- Reinforced concrete (RC) and prestressed concrete (PC): test reports according to EN 13381-3 for beams/columns and slabs/walls.
- Masonry compartmentation: classification reports per EN 13501-2 (tested EN 1364-1) applicable to plastered hollow brick walls and unplastered concrete block walls ≥ 8 cm.
- Wood substrates: reaction-to-fire class B-s2, d0 on all wood species including MDF.
- Non-fire-retarded XPS: provides class C reaction-to-fire.

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PRODUCT SHEET

HEALTH AND SAFETY

Refer to the latest Safety Data Sheet for instructions on handling, storage and disposal. Do not release product or empty containers into the environment.

For PROFESSIONAL USE ONLY.

LEGAL NOTICE

The information and recommendations given above, although they correspond to our best experience, must in any case be considered purely indicative and must be confirmed by exhaustive practical applications. Therefore, before using the product, anyone who intends to make use of it must determine whether it is or is not suitable for the intended application and, in any case, assumes all responsibility that may arise from its use. Always refer to the latest updated version of the technical data sheet, available on the website btechitalia.eu.

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