

# FB-TUF\_-CHM

## CARBON FIBER BOWS

**HIGH MODULUS - 31 g/m, 50 g/m, 71 g/m**

**FB-TUF\_-CHM** High-modulus carbon fiber bow with external elastic sleeve. The use of this product allows the existing structure to be mechanically anchored to the FRP reinforcement made from fabrics, plates, or meshes for the consolidation of masonry, reinforced concrete, or steel structures.

# FB-TUF\_-CHM

## TECHNICAL DATA

	Description			Ref.
Commercial name	FB-TUF08 CHM	FB-TUF10-CHM	FB-TUF12-CHM	-
Manufacturer	Fibre Net SpA			
Impregnated section nominal diameter (mm) <sup>(1)</sup>	8	10	12	CNR-DT 200/2004, CNR-DT 203/2006

## GEOMETRICAL AND MECHANICAL CHARACTERISTICS OF THE UNIMPREGNATED BOW

Property	UoM	Value			Ref.
Overall cross-section of the carbon fibers	mm <sup>2</sup>	18	28	40	ISO 1889 In-house method
Linear density of the non-impregnated bow	g/m	31	50	71	
Theoretical tensile breaking load of the bow	kN	>80	>100	>170	In-house method

## GEOMETRICAL AND MECHANICAL CHARACTERISTICS OF FIBERS

Property	UoM	Value			Ref.
Fiber type	-	High-modulus carbon fiber			-
Diameter of the fiber filament	μm	5			ISO 1888
Fiber density	g/cm <sup>3</sup>	1,79			ISO 10119
Tensile strength of the fiber	MPa	4.700			ISO 10618
Tensile elastic modulus of the fiber	GPa	390			
Elongation at break	%	1,2			

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## CHEMICAL AND PHYSICAL CHARACTERISTICS

Property	UoM	Value			Ref.
Type of impregnation resin	-	Betontex RC01 - Thermosetting epoxy resin			-
Consumption of cured resin	g/m	38	58	82	ISO 1183-1
Minimum and maximum temperature limits of use <sup>(2)</sup>	°C	-15 / +48			CIT 286 18/07/2017
Recyclability	-	recyclable			CSI 003/13
Combustion heat	MJ/kg	8,0			EN ISO 1716:2010
Fiber content by weight (average)	%	38			ISO 1172 In-house method

### CHARACTERISTICS

- High mechanical strength
- Extreme lightness
- High resistance to corrosion
- Compatibility with lime-based mortars
- Ease of application

### ADVANTAGES

- Durability and effectiveness of the intervention
- Timely and targeted interventions
- Sizing according to project requirements
- Does not require temporary mechanical fastening systems for installation

## LAYING INSTRUCTIONS

Before proceeding with the installation of the carbon fiber bows, it is necessary, where appropriate, to remediate the deteriorated parts by applying a mortar of suitable mechanical properties. Drill a hole 1.5 times the diameter of the bow. After the drilling, remove dust and loose material. Insert the previously impregnated bow inside the hole and fill it with epoxy/vinyl-ester resin, avoiding air gaps. Fan out the fibers of the bow. Subsequently, apply a layer of adhesive resin and impregnating agent and roll with bubble break rollers. Finally, lay down any reinforcing fabric or plate.

The connection of carbon fibers to metal elements can generate galvanic currents; in such cases, although the resin is electrically insulating, appropriate insulation systems are recommended, such as the use of an interface layer of fiberglass fabric.

## PACKAGING

Packaging: coils.  
Available lengths: 10 m, 25 m, and 50 m.

## HANDLING AND STORAGE CONDITIONS

The bows should be stored in a covered dry place, protected from rain and direct sunlight. The user should refer to the latest Material Safety Data Sheet. Prior to its use, the material must be protected from deposits of dust, grease, oil, and any other material capable of reducing adhesion between the rope and/or mortar and/or resin. Particular attention must be paid during transport, handling, and storage to avoid wire breakage due to excessive bending stresses (bumps, bends, etc.).

## RECYCLABILITY

Fibre Net has the "CSI RECYCLABLE COMPOSITES" certification for its FRP products. FB-TUF\_CHM bows are among the products certified by CSICERT and are fully recyclable.



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## SAFETY INSTRUCTIONS

Wear protective clothing and gloves, goggles and dust masks during handling and application. In case of skin contact, wash with soap and water. In case of eye contact, wash with water and seek medical attention if the irritation persists. For safety information, product use, and storage, the user should refer to the most recent Material Safety Data Sheet.

## ITEM SPECIFICATION

**FB-TUF\_-CHM** Fibre Net bow, or equivalent, with a high-modulus carbon fiber core and an outer elastic sleeve, for mechanical anchoring of FRP reinforcements made from fabrics, plates, or meshes to the existing structure according to BETONTEX-EPOXY System and C-MATRIX System. Nominal diameter of the impregnated section \_\_\_\_\_ mm, carbon fibers cross section \_\_\_\_\_ mm<sup>2</sup>, theoretical tensile strength of the bow  $\geq$  \_\_\_\_\_ kN. Made of high-tenacity carbon fibers, characterized by a 4,700 MPa fiber tensile strength, a 390 GPa fiber elastic modulus, and a 1.2% elongation at break.

Note 1: Values corresponding to a resin content of 65% in the impregnated bow.

Note 2: Value associated with the use of Betontex RC01 resin for impregnation and Betontex RC30/3 resin for grouting. The value may be affected using other materials and/or limitations imposed by the substrate and/or any plaster.

The purchaser is responsible for verifying the suitability of the products described in this document for their intended use and purposes. Fibre Net srl assumes no responsibility for improper use of the material. It is the customer's responsibility to verify that this sheet and the data contained herein are valid for the batch of product of interest to him and are not superseded as replaced by subsequent editions and/or new product formulations or certifications. The customer is encouraged to contact our Technical Department in advance. This edition invalidates and overrides all previous ones.