



Geometrical and Mechanical properties of the FRP composite *

Dry Fibre (yarn properties)

Ultimate tensile strength, σ_{fibra}	3080 MPa
Young's Modulus, E_{fibra}	95 GPa
Ultimate tensile strain, ϵ_{fibra}	3,15 %
Density	2,8 g/cm ³

Fabric impregnated with resin (calculation values)

Title of woven	1200 Tex
n° yarn/cm	3,3 yarn/cm
weight	396 g/m ²
Equivalent thickness of FRP, t_f	0,140 mm
Characteristic strength of FRP, f_{fk}	1900 MPa
Young's modulus of FRP, E_f	80 GPa
Characteristic ultimate tensile strain of FRP, ϵ_f	2,11 %

Updated 04 August 2010

* The properties of the composite have been determined according to the UNI and ASTM standards as indicated in the CNR-DT 200/2004 guidelines " Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Existing Structures". The characteristics strength and deformation are calculated as the average minus two times the standard deviation.

MATERIAL CHARACTERISTICS

Description

FIDBASALT UNIDIR 400 C95 is a textile composed of unidirectional basalt fibers produced by melting and subsequent spinning of volcanic rocks. The fabric is thermo-welded with polyester threads to prevent fraying and to facilitate the laying in the yard. It is a fabric suitable for reinforcing elements in CA and masonry and is used for the protection of elements subjected to severe impact thanks to its tenacity.

Ideal for:

- Structure subject to dynamic action and violent impact
- Strengthening for shear or/and flexural solicitationing beams and systems-floor;
- Confining columns and piers to increase the compression strength;
- Seismic mitigation;
- Mitigate design or post-construction defects;
- Strengthening structures which have been modified for architectural or configuration use;
- Connections and anchorages systems.

Advantages:

- Wear fiction proof
- not affected by the hydrolysis phenomena
- Strengthening system highly is resistant to corrosion;
- High tenacity, high resistance to impact ;
- Fatigue resistance, vibration and high thermal stability;
- durability and lightness;
- No increase in section of structural elements strengthened
- Electromagnetic transparency

PACKAGES

Each job size, sheets can be supplied to meet design requirements in different widths and lengths. Standard widths available in stock are 100, 200, 300, 400, 500 mm and different lengths.

RECOMMENDATIONS

When managing the sheet, protective clothing and glasses must be worn and instructions regarding the installation of the materials must be followed carefully.

Inhalation: breath fresh air and rinse out your mouth.

Skin contact: no special measures are needed.

Contact with eyes: rinse for at least 15 minutes; in case of use of contact lenses they must be removed and rinsed for at least another 5/10 minutes; If still painful seek medical care.

Ingestion: rinse the mouth by drinking water and inducing vomit. Seek medical care.

APPLICATION EXAMPLES

To learn about structural projects using unidirectional basalt fiber sheet visit the "Application" area at FIDIA website: www.fidiaglobalservice.com.

QUALITY & CERTIFICATION

Material supply is accompanied by a certificate of origin of the material from the producer and the certificate of characterization of the mechanical properties issued by an Italian laboratory approved by the Ministry of Infrastructure and Transport according to Art. 59 of D. P. R. 380/2001 construction material sector following the law .1086/71, with Decree n.38194 of 14/01/1992 and followings.

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FIDBASALT UNIDIR 400 C89®

UNIDIRECTIONAL BASALT FIBER SHEET FOR STRUCTURAL
STRENGTHENING



FIDIA srl
Technical Global Services

APPLICATION

1. Surface preparation

Clean the surface from dust, grease and other particles by brushing and sand blasting. Clean the reinforcements from eventual traces of rust and seal possible crevices.

2. Leveling surface

Leveling the surface in order to eliminate eventual roughness and incoherent materials.

3. Primer application

Apply to the surface, with a brush or a roller, a layer of primer and wait until it cured. Level the surface with putty.

4. Application of the first layer of saturant resin

Apply a first layer of epoxy to impregnate the sheet.

5. Sheet installation

Till the epoxy layer is still "fresh", install the sheet previously cut of the required dimension paying attention to not form any bubble by manually smoothing or by passing with a roller.

6. Sheet impregnation

Roll several times the sheet ensuring a good level of impregnation eliminating any excess of resin.

7. Finishing

Apply a second layer of epoxy and finish by applying silica sand; proceed with the application of polyuretan paint or polyurea for protecting the reinforcement.

NOTE LEGALI

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