

Technical Datasheet

FRS-W U300 Carbon Fibre Fabric



Characteristics



- Unidirectional CF-fabric for structural strengthening of concrete elements with externally bonded reinforcements
- Broad scope of applications such as axial strengthening of columns, shear strengthening of beams and flexural strengthening of slabs and beams
- High young's modulus (230 000 N/mm²) and high tensile strength (4200 N/mm²) (dry fibers)
- Component of ICC Evaluation Service Report 4774
- High alkaline resistance and high environmental and mechanical durability
- Low density and good transvers stability for improved handling

General Information

Composition	Unidirectional carbon fibre fabric stabilized with transvers thermoplastic threads
Appearance	Black fabric with periodic transvers threads
Delivery Unit	Roll of 150 m
Shelf life	24 months if stored appropriately in original packaging
Storage conditions	Storage under dry conditions, below + 50 °C temperature. The product must be protected from direct sun light. Do not kink the carbon fibers.
Transport conditions	Only in original packaging or in adequate packaging protected against mechanical impact and aggressive environments.
Packaging	Roll in plastic foil and carton overpack

Product Geometries

Art.-No.	Width [mm]	Area density [g/m ²]	Total area [m ²]	Roll length [m]
562073	500	300	75	150
562072	200	300	30	150

Approvals and Assessments

ESR-4774 (ICC-ES Evaluation Report)	According to AC 125
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Technical Data of the FRS-W U300 CF Fabric (dry fibers)

Property	Performance	
Construction	Fiber orientation (0°, unidirectional)	
	Carbon fiber (Warp, 98 M/M %)	
	Thermoplastic fibers (Weft, 2 M/M %)	
Tensile strength ^{1,2}	Mean value	4200 N/mm ²
Young's Modulus ^{1,2}	Mean value	230 000 N/mm ²
Elongation at break ^{1,2}	Mean value	1,80 %
Area density ³	Mean value	300 g/m ²
Density of carbon fibers	Mean value	1,77 g/cm ³

The values stated represent typical characteristics of the product.

¹According to ISO 13934-1 or internal standard (TAV PQL 06.01)

²Values determined in 0° longitudinal fiber direction

³According to ISO 3374:2000

Note that the technical parameters included in the technical assessments (ICC-ES Evaluation Report) are decisive for structural design. In case of questions regarding the structural design, please contact our national technical team.

Technical Data of the cured CFRP laminate using FRS-W U300 CF Fabric and FRS-CF Saturating Resin

Property	Performance	
Laminate nominal thickness	0,51 mm (1 ply)	
Tensile strength (ASTM D3039) ¹	Mean value	1000 N/mm ²
	Guaranteed strength	900 N/mm ²
Tensile Modulus (ASTM D3039) ¹	Mean value	83 000 N/mm ²
Elongation at break (ASTM D3039) ¹	Mean value	1,28 %
Glass transition temperature (ASTM D1640)	Mean value	67 °C
Interlaminar shear strength (ASTM D2344)	Mean value	31,4 N/mm ²

The values stated represent typical characteristics of the product and are not to be understood as binding products specifications.

¹According to ASTM D3039 calculated with a nominal thickness of 0.51 mm per ply. Single ply measured. Values determined in 0° longitudinal fiber direction.

Calculated ultimate tensile strength with respect to fiber cross section: 3000 N/mm², calculated tensile modulus with respect to fiber cross section: 230 000 N/mm²

Consumption of FRS-CF Saturating Resin for externally bonded FRS-W U300 Carbon Fibre Fabric

	Required amount of FRS-CF [kg/m ²]
Surface priming	Ca. 0,75
Each further ply	Ca. 0,75
Final topcoat	Ca. 0,50

The required amount of FRS-CF Saturating Resin may strongly depend on the concrete surface condition, roughness, layout of laminate crossings and layer thickness. Dry lay-up procedures are recommended for the application of FRS-W U300 CF-fabric, but wet lay-up procedures can be employed if desired. Consumption may differentiate depending on the saturation procedure.

System components of ESR-4774 (ICC-ES Evaluation Report)

Externally bonded unidirectional CF fabrics	fischer FRS-W U300 / FRS-W U600
Saturating resin for CF Fabric application	fischer FRS-CF
Fire protection coating against flame spread and smoke development	fischer FRS-FP
CFRP Laminates	fischer FRS-L-H / FRS-L-S
Epoxy mortar for the application of the CFRP laminate	fischer FRS-CS

Measurement data

The technical data given in this datasheet are based on laboratory testing according to given EN and ASTM norms. Actual measured data may deviate depending on the measurement procedures, devices and norms used.

Further information

- The structural design must be carried out by an experienced structural engineer.
- Applications out of the scope of the product approvals is out of the responsibility of the fischer group.
- The application of the FRS-W U300 CF Fabric using epoxy resins from other manufacturers is out of the responsibility range of the fischer group.
- Well trained and experienced contractors are to be commissioned to carry out the installation works.
- Wear protective clothing, gloves, goggles, and a face mask when cutting the fabrics. fabrics can be cut with technical scissors or a suitable circle cutter. It is recommended to cut in well-ventilated spaces due to fiber fly.
- For further information, please refer to your national fischer technical team or the Installation Manual for “C-Fiber Force Strengthening System with Carbon Fiber Fabrics”.

Please note that the data and information provided above are guidelines from laboratory and real-life experience and are not binding. This general information describes our products and their use, but due to varied working conditions, not every case can be covered. We recommend conducting tests or consulting the fischer technical team if in doubt. We provide information to outline our products and services, without guaranteeing specific properties or suitability for a particular purpose. Please always refer to the latest Technical Data Sheet as well as any national and international regulations. Upon publication of a new version, the previous Technical Data Sheet becomes invalid. Product users must retrieve the latest product data sheet at www.fischer-international.com. Our current general terms and conditions apply.