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/mm^2) and high tensile strength (4200 N/mm^2) (dry fibers)
- Component of ESR-4774 (ICC-ES Evaluation Report)
- 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	36 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 fold or bend the FRS-W U300 Carbon Fibre Fabric.
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

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/mm²
Young's Modulus[1,2]	Mean value	230 000 N/mm²
Elongation at break[1,2]	Mean value	1,80 %
Area density[3]	Mean value	300 g/m²
Density of carbon fibers	Mean value	1,77 g/cm³

The values stated represent typical characteristics of the product.

[1]According to ISO 13934-1 or internal standard (TAV PQL 06.01)
[2]Values determined in 0° longitudinal fiber direction
[3]According 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 Guaranteed strength	1000 N/mm² 900 N/mm²
Tensile Modulus (ASTM D3039)[1]	Mean value	83 000 N/mm²
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/mm²

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

[1]According 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: 240 000 N/mm²

Consumption of FRS-CF Saturating Resin for externally bonded FRS-W U300 Carbon Fibre Fabric	
	Required amount of FRS-CF [kg/m²]
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. The values given above may be considered as mean expected consumptions. 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.	

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”.