Technical Datasheet

FRS-W U600 Carbon Fibre Fabric

Characteristics

- Unidirectional CF fabric with increased area density 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)
- 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 100-150 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 U600 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]
562074	500	600	50	100
562075	200	600	30	150

Approvals and Assessments

ESR-4774 (ICC-ES Evaluation Report)	According to AC 125

Technical Data of the FRS-W U600 CF Fabric

Property	Performance	
Construction	Fiber orientation (0°, unidirectional) Carbon fiber (Warp, 98,8 M/M %) Thermoplastic fibers (Weft, 1,12 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	600 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 U600 CF Fabric and FRS-CF Saturating Resin

Property	Performance	
Laminate nominal thickness		1,02 mm (1 ply)
Tensile strength (ASTM D3039)[1]	Mean value	950 N/mm²
	Guaranteed strength	790 N/mm²
Tensile Modulus (ASTM D3039)[1]	Mean value	77 000 N/mm²
Elongation at break (ASTM D3039)[1]	Mean value	1,26 %
Glass transition temperature (ASTM D1640)	Mean value	67 °C
Interlaminar shear strength (ASTM D2344)	Mean value	35,6 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 1,02mm per ply. Single ply measured. Values determined in 0° longitudinal fiber direction.
Calculated strength with respect to fiber cross section: 2850 N/mm², calculated elastic modulus with respect to fiber cross section: 225 000 N/mm²

Consumption of FRS-CF Saturating Resin for externally bonded FRS-W U600 Carbon Fibre Fabric	
	Required amount of FRS-CF [kg/m²]
Surface priming	Ca. 0,75-0,90
Each further ply	Ca. 0,75-0,90
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. Wet lay-up procedures are recommended for the application of FRS-W U600 CF Fabric but dry lay-up procedures can be employed if desired. Care should be taken in dry lay-up to ensure complete saturation of the fabric. Consumption in wet lay-up 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 or 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 U600 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”.