TECHNICAL PRODUCT DATA SHEET

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solidian GRID Q95-CCE-38 (F01R01)

Symmetrical, bidirectional reinforcement grid (type Q) made of media-resistant carbon fiber reinforced polymer (CFRP) for the reinforcement of concrete components



Material

Fiber material	C (Carbon)	
Impregnation agent	E (Epoxy resin)	
Color	black	
Surface finish	smooth	
	XD3	Chlorides, except seawater
Chemical resistance of the reinforcement in relation to the exposure classes in accordance with EN 206-1	XS3	Chlorides from seawater
	X A 3	Chemical attack

Geo	metry and structure		Unit	Value	Standard
		longitudinal	roj	0	
	Directions of the fiber strands	transversal	[°] —	90	_
	Mean value of fiber strand width	longitudinal	[]	4,8	
¢ h		transversal	- [mm]	5,5	-
	Mean value of fiber strand height	longitudinal	_ [mm]	2,6	
) _∨		transversal	- [mm]	2,5	_
	Nominal diameter	longitudinal	[100.00]	3,35	
\$ nm		transversal	- [mm]	3,35	
		longitudinal	r 21	8,8	100 10 400 1
Anm	Nominal cross-sectional area per fiber strand	transversal	– [mm²] —	8,8	ISO 10406-1
a _{nm}	Nominal cross-sectional area per meter	longitudinal	[]	232	
		transversal	– [mm²/m] –	232	_
	Files and the state of the state of	longitudinal	- [mm²]	3,62	
∖ _{f,nm}	Fiber cross-sectional area per fiber strand	transversal	[[[11][1]_]	3,62	
_		longitudinal	- [mm²/m]	95	
a _{f,nm}	Fiber cross-sectional area per meter	transversal		95	_
S	Grid width	longitudinal	– [mm] —	38	
		transversal		38	_
	Clear distance of the fiber strands	longitudinal	- [mm]	32,8	
i i		transversal	- [mm]	33,5	_
lG	Grid height (average value of the maximum height)		[mm]	3,3	-
J	Weight per unit area of the non-metallic reinforcement		[g/m²]	559	-
ζü	Degree of coverage of the grid		[%]	25,2	-
min	Minimum permissible radius of curvature		[mm]	350	-

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x Coefficient of thermal expansion along the fiber [10 ⁻⁶ 1/k] 0,5 - Fg0 Glass transition temperature (DMA) [°C] ≥ 110 DIN 65583 Recommended operating temperature range [°C] >20 to +80 - Building material class components [®] [-] A2, non-combustible DIN 4102-1 Building material class reinforcement grid [-] E, normally flammable EN 13501-1 Mechanical properties Unit Value Standard Characteristic short-term tensile strength related to the nominal cross-sectional area longitudinal transversal [MPa] 1200 ISO 10406- fmmk Mean short-time tensile strength related to the flor longitudinal transversal [MPa] 97000 ISO 10406- fmmk fiber cross-sectional area longitudinal transversal [MPa] 23910 ISO 10406- fmmk fiber cross-sectional area longitudinal transversal [MPa] 23910 ISO 10406- fmmk fiber cross-sectional area longitudinal transversal [MPa] 23910 ISO 10406- fmmk related to the fiber cross-sectional area longitudinal transversa	Mate	erial properties		Unit	Value	Standard
T_{go} Glass transition temperature (DMA) [°C] ≥ 110 DIN 65583 Recommended operating temperature range [°C] > 210 DIN 4102-1 Building material class components ¹⁰ [-] A2, non-combustible DIN 4102-1 Building material class reinforcement grid [-] E, normally flammable EN 13501-1 Mechanical properties Unit Value Standard T_{max} Characteristic short-term tensile strength related to the nominal cross-sectional area Iongitudinal transversal (MPa) 1200 ISO 10406- Emm Mean short-time tensile strength related to the fiber cross-sectional area Iongitudinal transversal (MPa) 2 3910 ISO 10406- Emm Characteristic short-term tensile strength related to the fiber cross-sectional area Iongitudinal transversal (MPa) 2 2917 ISO 10406- Emm Characteristic short-term tensile strength related to the fiber cross-sectional area Iongitudinal transversal (MPa) 2 2917 ISO 10406- Emm Characteristic elongation at failure under tensile Iongitudinal transversal (MPa) 2 243000 ISO 10406- Emm W Characteristic tensile force transmission of the non-metall	ρ	Bulk density of the fiber composite material		[g/cm ³]	1,30	ISO 1183-1
Recommended operating temperature range [*C] -20 to +80 - Building material class components ¹⁰ [-] A2, non-combustible DIN 4102-1 Building material class reinforcement grid [-] E, normally flammable EN 13501-1 Mechanical properties Unit Value Standard Immk Characteristic short-term tensile strength related to the nominal cross-sectional area Imms fiber cross-sectional area Imms	α	Coefficient of thermal expansion	along the fiber	[10 ⁻⁶ 1/K]	0,5	-
Building material class components 10 I-I A2, non-combustible DIN 4102-1 Building material class reinforcement grid I-I A2, non-combustible DIN 4102-1 Building material class reinforcement grid I-I A2, non-combustible DIN 4102-1 Mechanical properties Unit Value Standard Image: Characteristic short-term tensile strength related to the nominal cross-sectional area Iongitudinal transversal IMPa] 1200 ISO 10406-1 Image: Transversal section Characteristic short-term tensile strength related to the fiber cross-sectional area Iongitudinal transversal (MPa] 2 3910 ISO 10406-1 Image: Transversal related to the fiber cross-sectional area Iongitudinal transversal (MPa] 2 3910 ISO 10406-1 Image: Transversal related to the fiber cross-sectional area Iongitudinal transversal (MPa] 2 2917 ISO 10406-1 Image: Characteristic short-term tensile strength related to the fiber cross-sectional area Iongitudinal transversal (MPa] 2 2917 ISO 10406-1 Image: Characteristic short-term tensile transmission of the non-metallic reinforcement Iongitudinal transversal (MPa] 2 243000 ISO 10406-1 Image: Characteristic tensile force	T _{g0}	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
Building material class reinforcement grid [-] E, normally flammable EN 13501-1 Mechanical properties Unit Value Standard Characteristic short-term tensile strength related to the nominal cross-sectional area longitudinal transversal [MPa] 1200 ISO 10406- Emm Young's modulus related to the nominal cross-sectional area longitudinal transversal (MPa] 97000 ISO 10406- Emm Mean short-time tensile strength related to the fiber cross-sectional area longitudinal transversal (MPa] ≥ 3910 ISO 10406- Characteristic short-term tensile strength longitudinal transversal [MPa] ≥ 3910 ISO 10406- Etronom Mean Young's modulus related to the fiber cross-sectional area longitudinal transversal [MPa] ≥ 2917 ISO 10406- Etronom Mean Young's modulus related to the fiber cross-sectional area longitudinal transversal [MPa] ≥ 2917 ISO 10406- Etronom Characteristic lengtion at failure under tensile longitudinal transversal [MPa] ≥ 2917 ISO 10406- Etronom Characteristic tensile force transmission of the non- longitudinal transversal [MPa] ≥ 243000 ISO 10406- </td <td></td> <td>Recommended operating temperature range</td> <td></td> <td>[°C]</td> <td>-20 to +80</td> <td>-</td>		Recommended operating temperature range		[°C]	-20 to +80	-
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Index fuber cross-sectional areatransversalImage: Constraint of the section	c		longitudinal	- [MPa]	≥ 3910	ISO 10406-7
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dgRecommended maximum grain size in concrete 2)[mm]8-Standard goods varietyUnitValueToleranceSingle gridLength Width[m] $6,0$ $\pm 16 \text{ mm}$ Single gridLength Width[m] $2,30$ $\pm 12 \text{ mm}$ Roll in CARGO System CS 3)Length Width[m] $\leq 130,0$ -Roll in CARGO System CS-U or CS-S 3)Length Width[m] $\leq 130,0$ -RollLength Width[m] $\leq 130,0$ -RollLength Width[m] $\leq 250,0$ -RollLength (m][m] $\leq 250,0$ -	⁻nm,k	metallic reinforcement per m width	transversal	- [KIN/M]	278	
Standard goods varietyUnitValueToleranceSingle grid $\begin{tabular}{c} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	Furti	her key values		Unit	Value	Standard
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Length Width[m] $6,0$ $\pm 16 \text{ mm}$ $2,30$ Roll in CARGO System CS ³) $\boxed{\text{Length}}$ Width[m] $\leq 130,0$ $-$ Roll in CARGO System CS-U or CS-S ³) $\boxed{\text{Length}}$ Width[m] $\leq 130,0$ $-$ Roll in CARGO System CS-U or CS-S ³) $\boxed{\text{Length}}$ Width[m] $\leq 130,0$ $-$ Roll $\boxed{\text{Length}}$ $2,30$ $\pm 12 \text{ mm}$ Roll $\boxed{\text{Length}}$ $\boxed{\text{Length}}$ $\boxed{\text{Im}}$ $\leq 250,0$ $-$	Stan	dard goods variety		Unit	Value	Tolerance
Width2,30 \pm 12 mmRoll in CARGO System CS 3) $ -$ Width[m] \leq 130,0 $-$ Width $3,0$ \pm 12 mmRoll in CARGO System CS-U or CS-S 3) $ -$ Width[m] \leq 130,0 $-$ Width[m] \leq 130,0 $-$ Roll $ -$	Single grid -		Length	- [m]	6,0	± 16 mm
Roll in CARGO System CS $^{(3)}$ Image: model of the system (S $^{(3)}$)Image: model of the			Width		2,30	± 12 mm
Width3,0 \pm 12 mmRoll in CARGO System CS-U or CS-S 3) $ -$ Width[m] \leq 130,0 $-$ Width2,30 \pm 12 mmLength \leq 250,0 $-$			Length		≤ 130,0	-
Roll in CARGO System CS-U or CS-S 3) Width 2,30 ± 12 mm Roll	Roll in CARGO System CS ³⁾		Width	- [m]	3,0	± 12 mm
Roll in CARGO System CS-U or CS-S ³) Width 2,30 ± 12 mm Length ≤ 250,0 -	Roll in CARGO System CS-U or CS-S ³⁾		Length	- [m]		-
Length≤ 250,0					2,30	± 12 mm
			Length	- [m]		-
	Koll					± 12 mm

Single grid up to 3,0 m wide on request. The maximum length of the grid as a roll depends on the product type and the type of transport. Please enquire before ordering. Please specify the required length of the grid as a roll when ordering.

Transport and storage

Non-metallic reinforcements from solidian GmbH must not be damaged during transportation, storage, processing and installation and must not be exposed to temperatures higher than 80°C. They must be stored dry, protected from the weather and without touching the ground. They must be protected from UV radiation and moisture until concreting and be free from bond-reducing impurities (e.g. grease, soil, loose concrete residues).

¹⁾ Building material class for components from a component thickness of 30 mm with a minimum concrete cover of 14 mm or for components with a component thickness of 30 mm and a single layer of centrally arranged reinforcement grid.

 $^{2)}\,\,\,d_g$ = 16 mm possible depending on the manufacturing process.

³⁾ The CARGO System CS is a stacking and transport rack for our reinforcement grids. In the CS-U version with additional unwinding device. In the CS-S version with additional unwinding device and cutting device.

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Measurement

Specified values were determined on the product itself. Deviating properties may occur in the structural component or during processing. We recommend checking the values by suitable structural component tests with the concrete formulation used in each case.

Tests

As part of our in-house production control, two test units with 6 tensile tests each per reinforcement direction are carried out for each production order for quality assurance purposes, from which the characteristic short-term tensile strength is determined. All other measured values are determined as part of a comprehensive product gualification and are not subject to continuous control

The described tensile tests per production order are included in the sales price. If you need an extended production control for your construction project, please contact us. We will be happy to provide you with a non-binding quotation for additional production-related tests.

Country-specific regulations

For the use of the product, the respective national regulations at the place of use apply, in Germany for example the building regulations of the federal states, and the technical provisions based on these regulations.

The design is generally carried out in accordance with the applicable standards for reinforced concrete components, whereby adjustments must be made for fiber composite reinforcements if applicable standards, guidelines (e.g. guideline for Germany "Concrete components with non-metallic reinforcement" of the German Committee for Reinforced Concrete (DAfStb) and the co-applicable standards cited in the guideline) etc. do not exist for reinforcements made of fiber reinforced polymer materials. Accordingly, the respective national standards and regulations must be taken into account in the design.

Processing information

All work must only be carried out by trained personnel.

Damaged fiber bundles (resin spalling, brittle areas, etc.) must not be installed, as the specified load-bearing capacity cannot be guaranteed. The specified values of the product only apply when used as intended.

For further information, please refer to the current Technical Information for our solidian reinforcement products.

Ecology and health protection

REGULATION (EC) NO. 1907/2006 - REACH.

This product is an article as defined in Article 3 of Regulation (EC) No 1907/2006 (REACH). It does not contain substances that are released from the article during normal use. A safety data sheet according to Article 31 of the same regulation is not required to place this product on the market, to transport it or to use it. For safe use, follow the instructions from this data sheet. To our current knowledge, this product does not contain any SVHC (Substances of Very High Concern) according to Annex XIV of the REACH Regulation or substances published on the Candidate List by the European Chemicals Agency at concentrations above 0,1% (w/w).

Industrial safety and health

The currently valid legal regulations on occupational health and safety must be observed during all transportation activities. Protective measures, such as wearing cut-resistant gloves, safety goggles and a dust mask, must be observed when working with cutting equipment. The specific handling of fiber reinforced polymers should be based on the respective national technical regulations.

Legal information

The above information is based on our knowledge and experience under normal circumstances, provided that the product has been transported, stored and used or processed properly and in accordance with the information in this product data sheet and the Technical Information for our solidian reinforcement products. The work results that can be achieved with our products depend in particular on their use and processing. The suitability of the product for the specific application must be checked in advance on your own responsibility.

Since non-metallic reinforcements are not yet regulated by building authorities in most countries, planners, specialist planners, building authorities, structural engineers, experts, etc. must be consulted for load-bearing components and countryspecific regulations must be observed.

We reserve the right to make changes to the product specifications. Third-party property rights must be observed. In all other respects, our respective terms and conditions of sale and delivery apply. The latest technical product data sheet at the time of purchase of our products shall apply.

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BUILEAU