## solidian.

## solidian GRID Q27-CCE-68 (F01R02)

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



Fiber material	C (Carbon)	
Impregnation material	E (Epoxy resin)	
Color	black	
Surface finish	smooth	
	XD3	Chlorides, except seawater
Chemical resistance of the reinforcement in relation to the	XS3	Chlorides from seawater
exposure classes in accordance with EN 206-1	XA3	Chemical attack

Geo	metry and structure		Unit	Value	Standard
	Directions of the fiber strands	longitudinal		0	
	Directions of the fiber strands	transversal	[°] —	90	
	Marca al configuration de l'alde	longitudinal	[]	5,3	
h	Mean value of fiber strand width	transversal	- [mm]	3,9	
	Mann unliss of filmer strend la sight	longitudinal	[]	1,4	
)∨	Mean value of fiber strand height	transversal	- [mm]	1,9	
	Nominal diameter	[]	2,37		
) nm	Nominal diameter	transversal	– [mm] —	2,37	
\ \	Nersiaal groep particul area war filoar strand	longitudinal	[2]	4,4	ISO 10406-1
Anm	Nominal cross-sectional area per fiber strand	transversal	– [mm²] –	4,4	
	Nonsignal events and times have not reaction	longitudinal	[2/]	65	
nm	Nominal cross-sectional area per meter	transversal	– [mm²/m] –	65	_
	Fileer cross continuel cross war fileer strend	longitudinal	[2]	1,81	
A <sub>f,nm</sub>	Fiber cross-sectional area per fiber strand	transversal	— [mm²] —	1,81	
		longitudinal	– [mm²/m] –––	27	
f,nm	Fiber cross-sectional area per meter	transversal	- [mm-/m]	27	
		longitudinal	[]	68	
	Mesh spacing	transversal	– [mm] —	68	
	Clear enacing of the fiber strands	longitudinal		64,1	
	Clear spacing of the fiber strands	transversal	– [mm] —	62,9	
١G	Mesh height (average value of the maximum height	E)	[mm]	2,9	-
l	Weight per unit area of the non-metallic reinforcem	ient	[g/m <sup>2</sup> ]	183	
ü	Degree of coverage of the mesh		[%]	13,0	-
min	Minimum permissible radius of curvature		[mm]	350	-

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Mate	erial properties		Unit	Value	Standard
)	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1150	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIF d]	1150	130 10400-
-	Young's modulus related to the nominal cross-sec-	longitudinal		94000	ISO 10406-1
nm	tion	transversal	[MPa]	94000	130 10406-
-	Mean short-time tensile strength related to the	longitudinal	[) (D - 1	≥ 3880	ISO 10406-
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 3880	
r	Characteristic short-term tensile strength related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 2900	160 10 100
f,nm,k		transversal		≥ 2900	ISO 10406-
_	Mean Young's modulus related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 235000	100 10 100
É f,nm,m		transversal		≥ 235000	ISO 10406-
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	507.3	≥ 12,2	
Enm,uk		transversal	[‰]	[‰] ≥ 12,2	ISO 10406-
_	Characteristic tensile force transmission of the non-	longitudinal	- [kN/m]	74	
nm,k	metallic reinforcement per m width	transversal		74	ISO 10406-
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete		[mm]	16	-
Stan	dard goods variety		Unit	Value	Tolerance
C'   -		Length	[]	6,0	± 16 mm
Single	mesn	Width	[m]	2,30	± 12 mm
		Length	E.o 7	≤ 130,0	-
Roll in CARGO SYSTEM -		Width	[m]	2,30	± 12 mm
		Length		≤ 250,0	-
Roll		Width	[m]	3,0	± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **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).

<sup>1</sup> 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 mesh.

## solidian.

#### **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 qualification 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.

Date: 08.07.2024 Version: 2407 solidian GRID Q27-CCE-68 Technical Product Data Sheet v2407.docx



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## solidian.

## solidian GRID Q43-CCE-21 (F01R01)

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

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#### **Material**

Fiber material	C (Carbon)						
Impregnation material	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					
exposure classes in accordance with EN 200-1	XA3	Chemical attack					

Geo	metry and structure		Unit	Value	Standard
	Divertience of the file of strends	longitudinal	гот	0	
	Directions of the fiber strands	transversal	[°] —	90	
	Mana volue of filoso strong dividtle	longitudinal	[]	2,2	
<b>þ</b> h	Mean value of fiber strand width	transversal	- [mm]	3,0	
L	Maan value of fiber strand beight	longitudinal		1,4	
¢∨	Mean value of fiber strand height	transversal	– [mm] —	1,1	
L	Nominal diameter	longitudinal		1,67	
⊅nm	Nominal diameter	transversal	– [mm] —	1,67	
^	Norsiant grant and and any filter strand	longitudinal	[2]	2,2	10 10 10 1
A <sub>nm</sub>	Nominal cross-sectional area per fiber strand	transversal	— [mm²] —	2,2	ISO 10406-1
_		longitudinal	— [mm²/m] —	105	
anm	Nominal cross-sectional area per meter	transversal		105	
^		longitudinal	r 21	0,91	
A <sub>f,nm</sub>	Fiber cross-sectional area per fiber strand	transversal	— [mm²] —	0,91	
_		longitudinal	[	43	
ð f,nm	Fiber cross-sectional area per meter	transversal	– [mm²/m] –	43	
_		longitudinal	[]	21	
5	Mesh spacing	transversal	– [mm] —	21	
	Clear marine, of the file of strends	longitudinal	[]	18,3	
ō	Clear spacing of the fiber strands	transversal	- [mm]	19,1	
٦G	Mesh height (average value of the maximum height	t)	[mm]	2,2	_
9	Weight per unit area of the non-metallic reinforcem	nent	[g/m <sup>2</sup> ]	280	_
۲ü	Degree of coverage of the mesh		[%]	18,9	-

[mm]

350

Minimum permissible radius of curvature

r<sub>min</sub>

# solidian.

Mate	erial properties		Unit	Value	Standard
С	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1300	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIPa]	1300	130 10406-
-	Young's modulus related to the nominal cross-sec-	longitudinal		94000	
nm	tion	transversal	[MPa]	94000	ISO 10406-1
	Mean short-time tensile strength related to the	longitudinal	D. (D. 1	≥ 4290	100 10 100
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 4290	ISO 10406-
	Characteristic short-term tensile strength related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 3200	15.0 10 10.5
f,nm,k		transversal		≥ 3200	ISO 10406-1
_	Mean Young's modulus related to the fiber cross-sectional area	longitudinal	- [MPa]	≥ 235000	100 10 100
E <sub>f,nm,m</sub>		transversal		≥ 235000	ISO 10406-1
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	- [‰]	≥ 13,8	100 40 400
nm,uk		transversal		≥ 13,8	ISO 10406-1
_	Characteristic tensile force transmission of the non-	longitudinal	- [kN/m]	136	
nm,k	metallic reinforcement per m width	transversal		136	ISO 10406-
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete		[mm]	5	-
Stan	dard goods variety		Unit	Value	Tolerance
		Length	onic	6,0	± 16 mm
Single	mesh	Width	- [m]	2,30	± 12 mm
		Length		≤ 130,0	-
Roll in CARGO SYSTEM -		Width	· [m]	2,30	± 12 mm
		Length		≤ 250,0	-
Roll –		Width	[m]	3,0	± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **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).

<sup>1)</sup> 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 mesh.

<sup>2)</sup>  $d_g = 8$  mm possible depending on the manufacturing process.

## solidian.

#### **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

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#### **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**

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#### **Industrial safety and health**

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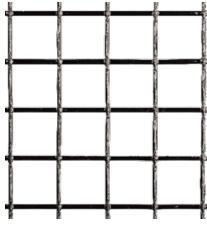




## solidian.

## solidian GRID Q47-CCE-38 (F01R01)

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



Fiber material	C (Carbon)	
Impregnation material	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
exposure classes in accordance with EN 200-1	XA3	Chemical attack

Geo	metry and structure		Unit	Value	Standard
	Directions of the fiber strands	longitudinal		0	
	Directions of the liber strands	transversal	[°] —	90	_
	Mean value of fiber strand width	longitudinal		3,5	
h	Mean value of fiber strand width	transversal	– [mm] —	4,2	
	Mean value of fiber strand height	longitudinal	_ [mm]	1,9	
•∨	Mean value of liber strand height	transversal	– [mm] —	1,8	
	Nominal diameter longitudinal [mm]	– [mm] —	2,37		
nm		transversal		2,37	_
1	Nominal cross-sectional area per fiber strand	longitudinal	- [mm²]	4,4	
Anm	Nominal cross-sectional area per fiber strand	transversal		4,4	130 10400-1
	Nominal cross costional area par mater	longitudinal	- [mm²/m]	116	
nm	Nominal cross-sectional area per meter	transversal		116	
	Fiber cross sectional area per fiber strand	longitudinal	- [mm²]	1,81	
\f,nm	Fiber cross-sectional area per fiber strand	transversal	[[1]]1]	1,81	
	Fiber cross sectional area par motor	longitudinal	[mm²/m]	47	
l f,nm	Fiber cross-sectional area per meter	transversal	[[[1]]]	47	
	Mash spacing	longitudinal		38	
	Mesh spacing	transversal	– [mm] —	38	
	Clear engeing of the fiber strands	longitudinal		34,2	
	Clear spacing of the fiber strands	transversal	– [mm] —	34,9	
G	Mesh height (average value of the maximum height	;)	[mm]	2,3	-
	Weight per unit area of the non-metallic reinforcem	ent	[g/m <sup>2</sup> ]	309	
ü	Degree of coverage of the mesh		[%]	18,9	
min	Minimum permissible radius of curvature		[mm]	350	-

# solidian.

viate	erial properties		Unit	Value	Standard
)	Bulk density of the fiber composite material		[g/cm³]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
g0	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1250	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIP d]	1250	130 10400-
	Young's modulus related to the nominal cross-sec-	longitudinal	[MPa]	99000	
nm	tion	transversal	[IVIPd]	99000	ISO 10406-1
	Mean short-time tensile strength related to the	longitudinal		≥ 4070	
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 4070	ISO 10406-
	Characteristic short-term tensile strength related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 3039	10.10.10.0
f,nm,k		transversal		≥ 3039	ISO 10406-
	Mean Young's modulus related to the fiber cross-sectional area	longitudinal		≥ 247000	100 10 100
E f,nm,m		transversal	[MPa]	≥ 247000	ISO 10406-
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	50/ 1	≥ 12,6	100 10 100
nm,uk		transversal	- [%]	≥ 12,6	ISO 10406-1
-	Characteristic tensile force transmission of the non-	longitudinal	- [kN/m]	145	100 10 100
nm,k	metallic reinforcement per m width	transversal		145	ISO 10406-
Furti	her key values		Unit	Value	Standard
d <sub>g</sub>	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	8	-
Stan	dard goods variety		Unit	Value	Tolerance
		Length	r 1	6,0	± 16 mm
ingle	mesh	Width	[m]	2,30	± 12 mm
) - II -		Length	F. 7	≤ 130,0	-
Roll in CARGO SYSTEM -		Width	[m]	2,30	± 12 mm
		Length		≤ 250,0	-
Roll		Width	[m]	3,0	± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **Transport and storage**

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<sup>1)</sup> 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 mesh.

<sup>2)</sup>  $d_g = 16$  mm possible depending on the manufacturing process.

## solidian.

#### **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 qualification 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**

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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.

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#### **Industrial safety and health**

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#### **Legal information**

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## solidian.

## **solidian** GRID Q71-CCE-51 (F01R01)

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



Fiber material	C (Carbon)					A
Impregnation material	E (Epoxy resin)					
Color	black					
Surface finish	smooth					
	XD3	Chlorides, except	seawater			
Chemical resistance of the reinforcement in relation to the	XS3	Chlorides from se	awater			
exposure classes in accordance with EN 206-1	XA3	Chemical attack				

Geo	metry and structure		Unit	Value	Standard
	Divertience of the file on stress de	longitudinal	101	0	
	Directions of the fiber strands	transversal	[°]	90	_
	Mean value of fiber strand width	longitudinal	[]	5,0	
h	Mean value of fiber strand width	transversal	– [mm] —	5,8	_
	Maan value of fiber strand beight	longitudinal		2,7	
V	Mean value of fiber strand height —	transversal	– [mm] —	2,6	_
	Nominal diameter	longitudinal		3,35	
nm	Nominal diameter	transversal	– [mm] —	3,35	_
	Nominal cross sastianal area par fiber strand	longitudinal	[2]	8,8	ISO 10406-1
Anm	Nominal cross-sectional area per fiber strand	transversal	— [mm²] —	8,8	130 10406-1
	Nonsignal evenes as sticked and some most start	Nominal cross-sectional area per meter transversal [mm²/m] -	[2/]	173	
nm	Nominal cross-sectional area per meter		- [mm-/m]	173	
	Fiber cross castional area par fiber strand	longitudinal	[2]	3,62	
\f,nm	Fiber cross-sectional area per fiber strand	transversal	— [mm²] —	3,62	
	Fiber cross castional area per motor	longitudinal	– [mm²/m] –	71	
f,nm	Fiber cross-sectional area per meter	transversal	[[[[[]]]]]	71	
	Mash spacing	longitudinal		51	
	Mesh spacing	transversal	- [mm]	51	
	Clear engine of the fiber strends	longitudinal		45,4	
	Clear spacing of the fiber strands	transversal	– [mm] —	46,2	
G	Mesh height (average value of the maximum height	)	[mm]	3,5	-
	Weight per unit area of the non-metallic reinforcem	ent	[g/m²]	454	
ü	Degree of coverage of the mesh		[%]	20,1	
min	Minimum permissible radius of curvature		[mm]	350	-

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viate	erial properties		Unit	Value	Standard
)	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
G <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1200	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIP d]	1200	130 10400-
	Young's modulus related to the nominal cross-sec-	longitudinal	[MPa]	97000	150 10 406 1
nm	tion	transversal	[IVIPa]	97000	ISO 10406-1
	Mean short-time tensile strength related to the	longitudinal		≥ 3910	ISO 10406-1
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 3910	
	Characteristic short-term tensile strength		0.40.1	≥ 2917	150 10 406
f,nm,k	related to the fiber cross-sectional area	transversal	[MPa]	≥ 2917	ISO 10406-1
	Mean Young's modulus related to the fiber cross-sectional area	longitudinal		≥ 243000	100 10 100
f,nm,m		transversal	[MPa]	≥ 243000	ISO 10406-1
	Characteristic elongation at failure under tensile	longitudinal	50/ 3	≥ 12,4	100 10 100
nm,uk	load of the non-metallic reinforcement	transversal	[‰]	≥ 12,4	ISO 10406-
	Characteristic tensile force transmission of the non-	longitudinal		207	ISO 10406-1
nm,k	metallic reinforcement per m width	transversal	[kN/m]	207	
urti	her key values		Unit	Value	Standard
ł <sub>g</sub>	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	8	-
itan	dard goods variety		Unit	Value	Tolerance
		Length		6,0	± 16 mm
ingle	mesh	Width	- [m]	2,30	± 12 mm
		Length		≤ 130,0	-
oll in	CARGO SYSTEM	Width	[m]	2,30	± 12 mm
		Length		≤ 250,0	-
Roll –		Width	· [m]	3,0	± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **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).

<sup>1)</sup> 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 mesh.

<sup>2)</sup>  $d_g = 16$  mm possible depending on the manufacturing process.

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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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## solidian.

## solidian GRID Q85-CCE-21 (F01R01)

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

		-	_	_	
-	_			-	

Fiber material	C (Carbon)	
Impregnation material	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
exposure classes in accordance with EN 200-1	XA3	Chemical attack

Geo	metry and structure		Unit	Value	Standard
	Directions of the file or stress de	longitudinal	r01	0	
	Directions of the fiber strands	transversal	— [°] —	90	
	Manage of Changes and Saluh	longitudinal	[]	3,4	
þh	Mean value of fiber strand width	transversal	— [mm] —	4,2	-
1	Mann volue of filmer strend in sight	longitudinal	[]	1,8	
¢∨	Mean value of fiber strand height	transversal	— [mm] —	1,5	_
1	Newsian Leisenster	longitudinal	[]	2,37	
<b>þ</b> nm	Nominal diameter	transversal	— [mm] —	2,37	_
^	Nersian erose estimations or files, strand	longitudinal	[mm mm <sup>2</sup> ]	4,4	10 10 400 1
A <sub>nm</sub>	Nominal cross-sectional area per fiber strand	transversal	— [mm²] —	4,4	— ISO 10406-
-		longitudinal	[mm mm <sup>2</sup> /mm ]	210	
a <sub>nm</sub>	Nominal cross-sectional area per meter	transversal	— [mm²/m] —	210	_
٨	Fiber cross sectional grap par fiber strand	longitudinal	- [mm²]	1,81	
A <sub>f,nm</sub>	Fiber cross-sectional area per fiber strand	transversal	— [mm²] —	1,81	
-	Fiber cross sectional grap per motor	longitudinal	[mm2/m]	85	
a <sub>f,nm</sub>	Fiber cross-sectional area per meter	transversal	— [mm²/m] —	85	_
		longitudinal	[]	21	
S	Mesh spacing	transversal	— [mm] —	21	
~	Clear engine of the fiber strends	longitudinal		17,0	
SI	Clear spacing of the fiber strands	transversal	— [mm] —	18,0	
٦G	Mesh height (average value of the maximum height)		[mm]	2,1	-
9	Weight per unit area of the non-metallic reinforceme	ent	[g/m²]	512	-
۲ü	Degree of coverage of the mesh		[%]	32,6	-
r <sub>min</sub>	Minimum permissible radius of curvature		[mm]	350	

# solidian.

Mate	erial properties		Unit	Value	Standard
С	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1250	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIPa]	1250	130 10406-
-	Young's modulus related to the nominal cross-sec-	longitudinal		99000	
nm	tion	transversal	[MPa]	99000	ISO 10406-1
	Mean short-time tensile strength related to the	longitudinal	() (D )	≥ 4070	ISO 10406-1
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 4070	
	Characteristic short-term tensile strength related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 3039	100 10 100 1
f,nm,k		transversal		≥ 3039	ISO 10406-1
	Mean Young's modulus related to the fiber cross-sectional area	longitudinal	- [MPa]	≥ 247000	
f,nm,m		transversal		≥ 247000	ISO 10406-1
	Characteristic elongation at failure under tensile	longitudinal	507.3	≥ 12,6	
nm,uk	load of the non-metallic reinforcement	transversal	- [‰] <u>≥ 12,6</u>	ISO 10406-1	
	Characteristic tensile force transmission of the non-	longitudinal		262	
nm,k	metallic reinforcement per m width	transversal	[kN/m]	262	ISO 10406-1
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	5	-
Stan	dard goods variety		Unit	Value	Tolerance
Jtan	uaru goous variety	Length	Unit	6,0	± 16 mm
Single	mesh	Width	- [m]	2,30	± 10 mm
		Length		≤ 130,0	
oll in	CARGO SYSTEM	Width	· [m]	2,30	± 12 mm
		Length		≤ 250,0	I 12 111111
Roll		Width	- [m]	3,0	- ± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **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).

<sup>1)</sup> 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 mesh.

<sup>2)</sup>  $d_g = 8$  mm possible depending on the manufacturing process.

## solidian.

#### **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 qualification and are not subject to continuous control.

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#### **Processing information**

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

#### **Ecology and health protection**

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#### **Industrial safety and health**

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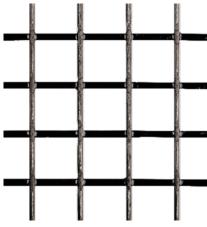




## solidian.

## solidian GRID Q95-CCE-38 (F01R01)

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



Fiber material	C (Carbon)	
Impregnation material	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
exposure classes in accordance with EIN 200-1	XA3	Chemical attack

Geol	metry and structure		Unit	Value	Standard
	Divertience of the file or streep de	longitudinal	гол	0	
	Directions of the fiber strands	transversal	[°]	90	
	Many value of films strend width	longitudinal	[]	4,8	
<b>þ</b> h	Mean value of fiber strand width	transversal	– [mm] —	5,5	
L	Maan value of fiber strand beight	longitudinal		2,6	
¢∨	Mean value of fiber strand height	transversal	– [mm] —	2,5	_
L	Nominal diameter	longitudinal	- [mm]	3,35	
<b>)</b> nm	Nominal diameter	transversal	- [mm]	3,35	
^	Nominal cross sostional area par fiber strand	longitudinal	[2]	8,8	10 10 10 10 1
Anm	Nominal cross-sectional area per fiber strand	transversal	– [mm²] –	8,8	— ISO 10406-
_	Nersiaal groop particulation particulation	longitudinal	– [mm²/m] –––	232	
a'um	Nominal cross-sectional area per meter	transversal		232	
^	Fiber cross sectional area par fiber strand	longitudinal	[2]	3,62	
A <sub>f,nm</sub>	Fiber cross-sectional area per fiber strand	transversal	– [mm²] –	3,62	
_	Fiber cross sectional area par mater	longitudinal	- [mm²/m]	95	
Ĵf,nm	Fiber cross-sectional area per meter	transversal		95	
_	Mash spacing	longitudinal		38	
ò	Mesh spacing	transversal	- [mm]	38	
_	Clear enacing of the fiber strends	longitudinal		32,8	
ō	Clear spacing of the fiber strands	transversal	– [mm] —	33,5	
٦G	Mesh height (average value of the maximum height	;)	[mm]	3,3	-
9	Weight per unit area of the non-metallic reinforcem	ent	[g/m²]	559	-
۲ü	Degree of coverage of the mesh		[%]	25,2	-
min	Minimum permissible radius of curvature		[mm]	350	-

# solidian.

Mate	erial properties		Unit	Value	Standard
С	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to	longitudinal	[MPa]	1200	ISO 10406-1
nm,k	the nominal cross-sectional area	transversal	[IVIPa]	1200	130 10406-
-	Young's modulus related to the nominal cross-sec-	longitudinal		97000	
nm	tion	transversal	[MPa]	97000	ISO 10406-1
	Mean short-time tensile strength related to the	longitudinal	D (D 1	≥ 3910	150 10 105
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 3910	ISO 10406-1
	Characteristic short-term tensile strength related to the fiber cross-sectional area	longitudinal	[MPa]	≥ 2917	10 10 10 1
f,nm,k		transversal		≥ 2917	ISO 10406-1
	Mean Young's modulus related to the fiber cross-sectional area	longitudinal		≥ 243000	
f,nm,m		transversal	[MPa]	≥ 243000	ISO 10406-1
	Characteristic elongation at failure under tensile	longitudinal	507.3	≥ 12,4	100 10 100
nm,uk	load of the non-metallic reinforcement	transversal	[‰]	≥ 12,4	ISO 10406-1
_	Characteristic tensile force transmission of the non-	longitudinal		278	
nm,k	metallic reinforcement per m width	transversal	[kN/m]	278	- ISO 10406-1
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	8	-
Stan	dard goods variety		Unit	Value	Tolerance
		Length		6,0	± 16 mm
Single	mesh	Width	- [m]	2,30	± 12 mm
		Length		≤ 130,0	_
Roll in	CARGO SYSTEM	Width	- [m]	2,30	± 12 mm
		Length		≤ 250,0	-
Roll –		Width	- [m]	3,0	± 12 mm

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#### **Transport and storage**

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<sup>2)</sup>  $d_g = 16$  mm possible depending on the manufacturing process.

## solidian.

#### **Measurement**

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#### 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 qualification and are not subject to continuous control.

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#### **Processing information**

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#### **Ecology and health protection**

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## solidian GRID Q121-RRE-38 (F02R01)

Symmetrical, bidirectional reinforcement mesh (type Q) made of alkali-resistant glass fiber reinforced polymer (GFRP) for the reinforcement of concrete components

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#### Material

Fiber material	R (ECR glass)
Impregnation material	E (Epoxy resin)
Color	yellowish
Surface finish	smooth

Geo	metry and structure		Unit	Value	Standard
	Directions of the fiber strands	longitudinal	- [°]	0	
	Directions of the liber strands	transversal		90	_
	Mean value of fiber strand width	longitudinal	[]	5,7	_
h		transversal	- [mm]	7,7	-
	Maan value of fiber strand height	longitudinal	[mm]	3,2	
V	Mean value of fiber strand height	transversal	- [mm]	2,4	-
	Nominal diameter	longitudinal	[]	3,57	
nm	Nominal diameter	transversal	- [mm]	3,57	-
	New Sector of the sector of the sector of	longitudinal	r 21	10,0	100 10 400 1
nm	Nominal cross-sectional area per fiber strand	transversal	[mm <sup>2</sup> ]	10,0	ISO 10406-1
	Nextical areas as the set error more than	longitudinal	[	263	
nm	Nominal cross-sectional area per meter	transversal	- [mm²/m]	263	-
	E'less services d'actives a configuration de	longitudinal	r 21	4,62	
f,nm	Fiber cross-sectional area per fiber strand	transversal	[mm <sup>2</sup> ]	4,62	-
		longitudinal	- [mm²/m]	121	
f,nm	Fiber cross-sectional area per meter	transversal		121	-
	Mark and free	longitudinal	[	38	
	Mesh spacing	transversal	- [mm]	38	-
		longitudinal	[	30,7	
	Clear spacing of the fiber strands	transversal	- [mm]	33,1	-
G	Mesh height (average value of the maximum height)		[mm]	5,3	-
	Weight per unit area of the non-metallic reinforceme	ent	[g/m²]	901	-
ü	Degree of coverage of the mesh		[%]	31,8	-
min	Minimum permissible radius of curvature		[mm]	300	-
/lat	erial properties		Unit	Value	Standard
	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,68	ISO 1183-1
	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	6,0	-
30	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1

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Mec	hanical properties		Unit	Value	Standard
r	Characteristic short-term tensile strength related to	longitudinal		550	
f <sub>nm,k</sub>	the nominal cross-sectional area	transversal	- [MPa] -	550	
-	Young's modulus related to the nominal cross-sec-	longitudinal	[N 4D - ]	33000	100 10 400 1
Enm	tion	transversal	- [MPa] —	33000	
£	Mean short-time tensile strength related to the	longitudinal	- [MPa] —	≥ 1600	10 10 10 1
t <sub>f,nm,m</sub>	fiber cross-sectional area	transversal		≥ 1600	— ISO 10406-1
c	Characteristic short-term tensile strength	longitudinal		≥ 1200	10 10 10 1
t <sub>f,nm,k</sub>	related to the fiber cross-sectional area	transversal	- [MPa] —	≥ 1200	— ISO 10406-1
F	Mean Young's modulus related to the fiber	longitudinal		≥ 78000	150 10 400 1
E <sub>f,nm,m</sub>	cross-sectional area	transversal	- [MPa] —	≥ 78000	— ISO 10406-1
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	FO/ 1	≥ 16,7	10 10 400 1
€nm,uk		transversal	[‰] —	≥ 16,7	
-	Characteristic tensile force transmission of the non-	longitudinal		145	— ISO 10406-1
F <sub>nm,k</sub>	metallic reinforcement per m width	transversal	- [kN/m] —	145	
Furt	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete $^{2)}$		[mm]	8	-
Stan	dard goods variety		Unit	Value	Tolerance
		Longth		6,0	+ 16 mm
Circolo		Length	[real	070	± 10 mm
Single	mesh -	Width	- [m] —	2,30	± 10 mm
				- / -	
	CARGO SYSTEM	Width	- [m] —	2,30	
		Width Length		2,30 ≤ 130,0	± 12 mm

Single mesh up to 3.0 m wide on request. The maximum length of the mesh as a roll depends on the product type and the type of transport. Please enquire before ordering. Please specify the required length of the mesh as a roll when ordering. The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **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).

<sup>1)</sup> 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 mesh.

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

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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 qualification 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

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.

Date: 08.07.2024 Version: 2407 solidian GRID Q121-RRE-38 Technical Product Data Sheet v2407.docx

when used as intended.



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## **solidian** GRID R24/95-CCE-76/38 (F01R01)

Asymmetrical, bidirectional reinforcement mesh (type R) made of media-resistant carbon fiber reinforced polymer (CFRP) for the reinforcement of concrete components



Fiber material	C (Carbon)	
Impregnation material	E (Epoxy resin)	
Color	black	14 II
Surface finish	smooth	
	XD3	Chlorides, except seawater
Chemical resistance of the reinforcement in relation to the	XS3	Chlorides from seawater
exposure classes in accordance with EN 206-1	XA3	Chemical attack

Geo	metry and structure		Unit	Value	Standard
	Directions of the fiber strands	longitudinal	101	0	
	Directions of the liber strands	transversal	- [°]	90	
φh	Mean value of fiber strand width	longitudinal	[]	3,1	
		transversal	- [mm]	5,5	
	Mean value of fiber strand height	longitudinal	[]	1,8	
¢∨		transversal	- [mm]	3,1	
		longitudinal	[]	2,37	
nm	Nominal diameter	transversal	- [mm]	3,35	
^		longitudinal	[	4,4	10 10 10 1
4 <sub>nm</sub>	Nominal cross-sectional area per fiber strand	transversal	- [mm²]	8,8	
		longitudinal	[	58	
a'nm	Nominal cross-sectional area per meter	transversal	- [mm²/m]	232	
		longitudinal	r 21	1,81	
∖f,nm	Fiber cross-sectional area per fiber strand	transversal	- [mm²]	3,62	
		longitudinal	[	24	
f,nm	Fiber cross-sectional area per meter	transversal	- [mm²/m]	95	
	Mesh spacing	longitudinal	r 1	76	
S		transversal	- [mm]	38	
		longitudinal	[	72,8	
	Clear spacing of the fiber strands	transversal	- [mm]	32,5	
IG	Mesh height (average value of the maximum height)		[mm]	3,0	_
ļ	Weight per unit area of the non-metallic reinforcement		[g/m²]	381	
ü	Degree of coverage of the mesh		[%]	18,0	
min	Minimum permissible radius of curvature		[mm]	350	-

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Mate	erial properties		Unit	Value	Standard
С	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to the nominal cross-sectional area	longitudinal	- [MPa]	1250	ISO 10406-1
nm,k		transversal		1200	130 10406-
-	Young's modulus related to the nominal cross-sec-	longitudinal		99000	ISO 10406-7
nm	tion	transversal	[MPa]	97000	
	Mean short-time tensile strength related to the	longitudinal		≥ 4070	ISO 10406-7
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 3910	
	Characteristic short-term tensile strength	longitudinal	0.00.1	≥ 3039	ISO 10406-1
f,nm,k	related to the fiber cross-sectional area	transversal	[MPa]	≥ 2917	
_	Mean Young's modulus related to the fiber cross-sectional area	longitudinal	- [MPa]	≥ 247000	ISO 10406-7
f,nm,m		transversal		≥ 243000	
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	- [‰]	≥ 12,6	ISO 10406-
€ <sub>nm,uk</sub>		transversal		≥ 12,4	
_	Characteristic tensile force transmission of the non-	longitudinal		72	ISO 10406-7
nm,k	metallic reinforcement per m width	transversal	[kN/m]	278	
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	8	-
Stan	dard goods variety		Unit	Value	Tolerance
		Length		6,0	± 16 mm
Single mesh -		Width	[m]	2,30	± 12 mm
Roll in CARGO SYSTEM -		Length	- [m]	≤ 130,0	-
		Width		2,30	± 12 mm
		Length	- [m]	≤ 250,0	_
Roll		Width		3,0	± 12 mm

The CARGO SYSTEM is a stacking and transport rack with unrolling device for our reinforcement mesh.

#### **Transport and storage**

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<sup>1)</sup> 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 mesh.

<sup>2)</sup>  $d_g = 16$  mm possible depending on the manufacturing process.

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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.

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#### **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**

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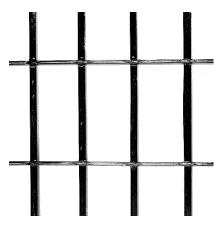




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## **solidian** GRID R95/24-CCE-38/76 (F01R01)

Asymmetrical, bidirectional reinforcement mesh (type R) made of media-resistant carbon fiber reinforced polymer (CFRP) for the reinforcement of concrete components



Fiber material	C (Carbon)			
Impregnation material	E (Epoxy resin)			
Color	black			
Surface finish	smooth			
	XD3	Chlorides, except seawater		
Chemical resistance of the reinforcement in relation to the	XS3	Chlorides from seawater		
exposure classes in accordance with EN 206-1	XA3	Chemical attack		

Geo	metry and structure		Unit	Value	Standard
	Directions of the fiber strands	longitudinal	101	0	
	Directions of the fiber strands	transversal	[°]	90	
		longitudinal	[]	5,1	
<b>)</b> h	Mean value of fiber strand width	transversal	— [mm] —	3,8	_
¢∨	Mean value of fiber strand height	longitudinal	[20.20]	3,1	
		transversal	— [mm] —	1,8	
	Nominal diameter	longitudinal	[20.20]	3,35	
<b>¢</b> nm		transversal	— [mm] —	2,37	
^		longitudinal	[2]	8,8	ISO 10406-1
۹ <sub>nm</sub>	Nominal cross-sectional area per fiber strand	transversal	— [mm²] —	4,4	130 10406-
<u></u>	Nominal cross-sectional area per meter	longitudinal	— [mm²/m] —	232	
a'um		transversal		58	
^	E'less and a string of a second string of	longitudinal	[mm2]	3,62	
A <sub>f,nm</sub>	Fiber cross-sectional area per fiber strand	transversal	— [mm²] —	1,81	
		longitudinal	— [mm²/m] —	95	
a f,nm	Fiber cross-sectional area per meter	transversal		24	
	Mesh spacing	longitudinal	[20.20]	38	
S		transversal	— [mm] —	76	
		longitudinal	[20.20]	33,4	
5	Clear spacing of the fiber strands	transversal	— [mm] —	72,8	
١G	Mesh height (average value of the maximum height)		[mm]	3,3	-
J	Weight per unit area of the non-metallic reinforcement		[g/m²]	350	-
ζü	Degree of coverage of the mesh		[%]	17,4	
min	Minimum permissible radius of curvature		[mm]	350	-

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Mate	erial properties		Unit	Value	Standard
С	Bulk density of the fiber composite material		[g/cm <sup>3</sup> ]	1,30	ISO 1183-1
Х	Coefficient of thermal expansion	along the fiber	[10 <sup>-6</sup> 1/K]	0,5	-
T <sub>g0</sub>	Glass transition temperature (DMA)		[°C]	≥ 110	DIN 65583
	Recommended operating temperature range		[°C]	-20 to +80	-
	Building material class components <sup>1)</sup>		[-]	A2, non-combustible	DIN 4102-1
	Building material class reinforcement mesh		[-]	E, normally flammable	EN 13501-1
Mec	hanical properties		Unit	Value	Standard
nm,k	Characteristic short-term tensile strength related to the nominal cross-sectional area	longitudinal	- [MPa]	1200	
nm,k		transversal		1250	ISO 10406-1
	Young's modulus related to the nominal cross-sec-	longitudinal		97000	ISO 10406-1
nm	tion	transversal	[MPa]	99000	
	Mean short-time tensile strength related to the	longitudinal		≥ 3910	ISO 10406-7
f,nm,m	fiber cross-sectional area	transversal	[MPa]	≥ 4070	
	Characteristic short-term tensile strength	longitudinal	0.00.1	≥ 2917	ISO 10406-1
f,nm,k	related to the fiber cross-sectional area	transversal	[MPa]	≥ 3039	
_	Mean Young's modulus related to the fiber cross-sectional area	longitudinal	- [MPa]	≥ 243000	ISO 10406-7
f,nm,m		transversal		≥ 247000	
	Characteristic elongation at failure under tensile load of the non-metallic reinforcement	longitudinal	- [‰]	≥ 12,4	ISO 10406-
€ <sub>nm,uk</sub>		transversal		≥ 12,6	
_	Characteristic tensile force transmission of the non-	longitudinal	- [kN/m]	278	ISO 10406-1
nm,k	metallic reinforcement per m width	transversal		72	
Furti	her key values		Unit	Value	Standard
dg	Recommended maximum grain size in concrete <sup>2)</sup>		[mm]	8	-
Stan	dard goods variety		Unit	Value	Tolerance
		Length		6,0	± 16 mm
Single mesh -		Width	- [m]	2,30	± 12 mm
		Length		≤ 130,0	_
Roll in CARGO SYSTEM -		Width	[m]	2,30	± 12 mm
		Length	- [m]	≤ 250,0	-
Roll		Width		3,0	± 12 mm

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#### **Transport and storage**

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#### **Processing information**

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

#### **Ecology and health protection**

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