

BASFIBER® TWISTED YARNS

Basfiber® twisted yarns are mainly recommended for further textile processing into different types of fabrics, tapes, ropes, sleeves, etc.

NOMENCLATURE

Our nomenclature is based on three letter followed by three numbers split by dot and dashes.

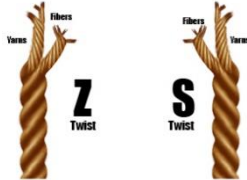
Example: **YTW-11.150-12.Z60**

The three letter YTW stands for our Twisted Yarns. The following number represents:

- 11 – Monofilament Diameter μm .
- 150 – Linear Densitu Tex.
- 12 – Type of Sizing.
- Z – Twist direction (Z or S).
- 60 Twists per meter.

THE TWIST

S-twist and Z-twist yarns are the direction in which the yarn is spun is called twist. Yarns are characterized as S-twist or Z-twist according to the direction of spinning.



MECHANICAL PROPERTIES:

PROPERTY	VALUE
Tenacity of the twisted yarn, mN/tex:	for 10 μm , 68 and 136 tex, sizing 12 >700
	for 10 μm , >650
	for 11 μm , >600
	> 11 μm , >550
Allowance for twist per meter, %	for 50 TPM and less ± 20
	for 50 - 100 T ± 15

OTHER MECHANICAL PROPERTIES:

	10	13	17
Monofilament diameter, μm	10	13	17
Tensile test according ASTM D-3822 (dry fiber), tensile strength, mN/tex	≥ 700	≥ 650	≥ 600
Tensile test according ASTM D-2343 (in epoxy impregnated strand), tensile strength, MPa	3200	3100	2900
Tensile test according ASTM D-2343 (in epoxy impregnated strand), tensile modulus, GPa	90-94	88-92	86-90
Tensile test according ASTM D-2101 (Basalt monofilament), tensile strength, MPa	4300	4200	4000
Tensile test according ASTM D-2101 (Basalt monofilament), tensile modulus, GPa	95	93	92

SIZING COMPATIBILITY

No. OF SIZING	TYPE	COMPATIBILITY	SIZING CONTENT, % WEIGHT	MOISTURE, % WEIGHT
10	Silane	EP, PF, PP*, acrylate, PA	0,4-0,8	<0,1
11	Silane	UP, VE, EP	0,4-0,8	<0,1
12	Silane	EP, PF	0,4-0,8	<0,1
13	Silane	concrete, EP, PF, acrylate	0,4-0,8	<0,1

THERMAL OPERATION RANGE OF BASFIBER®

Thermal load duration	Temperature range
Permanent	From -260 up to +400 °C
(1) Stage 1: amorphous fiber with sizing on the fiber surface	Up to +200 °C
(2) Stage 2: burning of sizing (10-15 minutes), amorphous fiber	From +200 up to +350 °C
(3) Stage 3: amorphous fiber without sizing on the fiber surface	From +350 up to +400 °C
Short term (few minutes)	From +400 up to +850 °C
(4) Stage 4: transition of FeO into Fe2O3 and beginning of crystalliza	From +400 up to +850 °C
Short term (few seconds)	From +850 up to +1250 °C
(5) Stage 5: all the Fe2O3 is in crystal form, the material is extremely brittle, its mechanical properties are extremely poor but without stress and vibration it continues working as thermo insulation pretty good	From +850 up to +1050 °C
(6) Stage 6: sintering temperature	From +1050 up to +1250 °C

Type of bobbins

Type of bobbins	Amount of roving (kg)
Flange bobbins - 68 tex:	+20°C
Flange bobbins - 68 tex, 2 plies	100%
Flange bobbins – others.	5-7
Flange bobbins – samples.	1-2

PACKAGING INFORMATION

Type of packaging: cardboard box, 66 or 88 bobbins on the pallet.

Disclaimer of Liability: This data is offered solely as a guide in the selection of reinforcement. The information contained in this publication is based on actual laboratory data and field test experience. We believe this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability arising out of its use or performance. The user, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before committing to production. It is important for the user to determine the properties of its own commercial compounds when using this or any other reinforcement.



PROPERTY	DESCRIPTION
Type of fiber	Basfiber®
Monofilament diameter [μm]	From 10 to 22
Linear density of the single yarn [tex]	68-150
Number of Piles	1-8
Twists per Meter	20-100
Type of sizing	10, 11, 12 and 13.
Sizing content (% wt.)	≥ 0.4
Resin compatibility	(12)epoxy and phenolic (11)resins Polyester, vinyl ester, epoxy
Moisture content (% wt.)	<0.5

THERMAL PROPERTIES

Melting Range:	1460-1500°C
Crystallization temperature:	1250 °C
Sintering Temperature:	1050 °C
Thermal Conductivity, W/(m·K)	0.031-0.038

TENSILE STRENGTH CHANGE BY THE HEATING OF BASFIBER®

Temperature	+20°C	+200°C	+400°C
Tensile Strength Change	100%	95%	80%

CHEMICAL STABILITY

	Cem FIL	Basfiber®	E-glass
Weightlessness:			
3-hour boiling in water	-	0.2%	-
3-hour boiling in saturated cement solution (pH 12,9)	0.15%	0.35%	4.5%
3-hour boiling in 2N solution HCl (hydrochloric acid)	-	2-7%	38.5%
3-hour boiling in 2N solution NaOH (sodium hydroxide)	-	6%	-
30 minutes and in 180 minutes in H2SO4 (sulphuric acid)	-	2% - 6%	14% - 22%

