

### BASFIBER® ADVANCED TEXTILES TRI-AXIAL FABRICS

Tri-axial fabrics are a three layer construction fabric, there are two styles in tri-axial one has a fiber orientation of (+45°/90°/-45°) and the other has a fiber orientation of (0°/+45°/-45°). Tri-axial fabrics are used for high strength application and this fabric can be produced with the maximum density of 3000 gsm.

Basalt fabrics could be used in different compositions for fire, sound and heat protection, in laminates production, in construction elements and equipment – as a replacement to glass fabrics.

#### NOMENCLATURE

Our nomenclature is based on three letter followed by three numbers.

Example: FTA-904

The first letters will be always F which stands for our Fabrics line of products. The following letter the type of woven ie. PL-Plain , TW-Twill, BA-Bi-Axial, TA-Tri-axial and so on. The number represents the weight of the Fabrics in grams by square meters.

#### MECHANICAL PROPRIETIES:

WEAVE	TRI-AXIAL
Weight (g/sqm):	904 ±8%
Weight per Layer + 45°(g/sqm):	298 ±8%
<b>Basfiber® Tex:</b>	1200
Weight per Layer - 45°(g/sqm):	298 ±8%
<b>Basfiber® Tex:</b>	1200
Weight per Layer (Yarn Type) - 0°(g/sqm):	284 ±8%
<b>Basfiber® Tex:</b>	1200
Stitching : (g/sqm):	24 ±8%
Width (cm):	127 ±3%
Density (g/cm²):	2.67
Melting Point (°C):	1350
Combustibility (M0)	Non-Combustible
Moisture content (wt%) Fabric:	< 0.3
UV Stability	6
Colour Fasteness	6



#### THERMAL PROPERTIES

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

#### TECHNICAL COMPARISON WITH OTHER FIBERS:

CHEMICAL STABILITY	BASFIBER®	GLASSFIBER	SILICA
Max. Application Temperature (°C):	982	650	1100
Operation Temperature (°C):	700	400	1000
Min. Operation Temperature (°C):	-200	-60	-170
Thermal Conductivity (W/m K):	0.031-0.038	0.029-0.035	0.035-0.04
Melting Temperature (°C):	1450	1120	1550
Thermal Expansion Coefficient (ppm/°C):	8.0	5.4	0.05

PHYSICAL / MECHANICAL PROPRIETIES	BASFIBER®	GLASSFIBER	SILICA
Density (g/cm²):	2.8	2.57	2.15
Filament diameter (µm):	13-20	9-13	9-15
Tensile Strength (MPa):	4840	3450	4750
Elastic Modulus (GPa):	89	77	66
Elongation at Break (%):	3.15	4.7	1.2
Linear Expansion Coefficient (x10K):	5.5	5	0.5
Absorption of Humidity (65% RAH):	<0.1	<0.1	<0.1
Stability at tension (20°C):	100	100	100
Stability at tension (200°C):	95	92	94
Stability at tension (400°C):	82	52	80

ACOUSTIC PROPRIETIES	BASFIBER®	GLASSFIBER	SILICA
Sound Absorption Coefficient (%):	0.9-0.99	0.8-0.93	0.85-0.95

CHEMICAL PROPRIETIES	BASFIBER®	GLASSFIBER	SILICA
Specific Volume resistance (Ohm's):	1*10x12	1*10x11	1*10x11
Loss angle tangent frequency (1 MHz):	0.005	0.0047	0.0049
Relative dielectric permeability (1 MHz):	2.2	2.3	2.3

CHEMICAL COMPARISON	BASFIBER®	E-GLASS	CHEMICAL STABILITY				
Silicon Dioxide ( SiO <sub>2</sub> )	48 - 59%	52 - 56%	Weightlessness:	Cem FIL	Basfiber®	E-glass	Silica
Baron Oxide ( B <sub>2</sub> O )	1%	5 - 10%	3-hour boiling in water	-	0.2%	-	0.05%
Calcium Oxide ( CaO )	6 - 9%	21 - 24%	3-hour boiling in saturated cement solution (pH 12,9)	0.15%	0.35%	4.5%	-
Titanium Dioxide ( TiO <sub>2</sub> )	0.8 - 2.3%	0 - 1.5%	3-hour boiling in 2N solution HCl (hydrochloric acid)	-	2-7%	38.5%	15.7%
Iron Oxide ( Fe <sub>2</sub> O <sub>3</sub> FeO )	7 - 12%	1%	3-hour boiling in 2N solution NaOH (sodium hydroxide)	-	6%	-	5.0%
Alumina ( Al <sub>2</sub> O <sub>3</sub> )	15 - 18%	12 - 14%	30 minutes and in 180 minutes in H <sub>2</sub> SO <sub>4</sub> (sulphuric acid)	-	2% - 6%	14% - 22%	-
Magnesium Oxide ( MgO )	3 - 5%	0 - 5%					
Sodium + Potassium ( NaO + K <sub>2</sub> O )	4 - 5%	0 - 1%					

#### PACKAGING

Standard rolls 100m, others lengths available on request. Tube interior diameter is 76 mm. Fabrics rolls are individually wrapped in foil and delivered on a pallet.

#### STORAGE

Basalt fabrics should be stored in the package at the stock (indoor conditions). Rolls should be placed parallel to each other.

**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.

