

ARROWTEX™ is a leading distributors of advance the reinforce fibers and its raw material which has wide used in construction and infrastructures projects.

The major reasons for the fiber reinforced is inadequate structure design, unappropriate use of construction materials, increased load bearing capacity due to change in plan and corrosion of the building materials.

The engineering fibers are widely used in applications such as retrofitting and strengthening of old structure, columns and beams. It can be used for new construction and repairs of airports, runways, highways, bridges, dams, canals, power plants, metro rails, mono rails and seismic retrofitting.



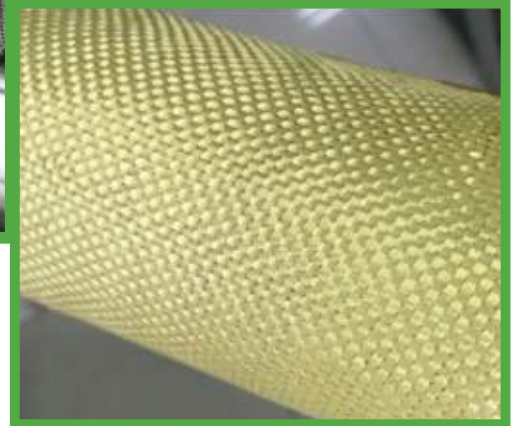
GLASS FIBER



BASALT FIBER



CARBON FIBER



ARAMID FIBER

HOUSE OF ADVANCE COMPOSITE RAW MATERIALS
(ISO - 9001-2015 CERTIFIED COMPANY)

CARBON FIBER

Carbon Fiber Bidirectional Cloth:

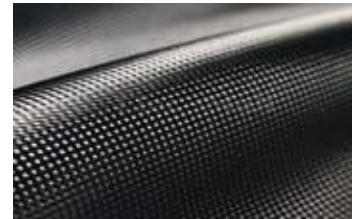
Carbon Fiber is a PAN based product with its super strength at remarkably low weight.

They serve the ideal purpose of strengthening of the existing building structure to increase its overall height. Carbon Fiber wrapping is done onto the surface of the structure to improve its load bearing capacity or fill out the cracks developed on its surface.

Code	Reinforcement Yarn		Weave Pattern	Fiber Count (10mm)		Weight (g/m ²)	Thickness (mm)
	Warp	Weft		Warp	Weft		
401-111	3K	3K	Plain / Twill	5	5	200	0.25
401-112	12K	12K	Plain / Twill	2.5	2.5	400	0.46
401-113	12k	12k	Plain / Twill	3	3	480	0.52

Application:

- Old Buildings or Structures Retrofitting.
- Seismic Retrofitting.
- Strengthening of the structures.



Carbon Fiber Unidirectional Cloth:

The unidirectional fabric have carbon fiber aligned in only one position (generally the warp position) with fiberglass yarn aligned in the cross direction. The strength of a UD fabric lies only in one direction because of this. Due to its easy to use, low cost and high strength, these fabrics are widely used in the building retrofitting.

CODE	Reinforcement Yarn	Tensile Strength (MPa)	Weight (g/m ²)	Thickness (mm)
402 -111	T700-12K	3850.00	245	0.24
402 -112	T700-12K	3850.00	330	0.32
402 -113	T700-12K	3850.00	400	0.44

Application:

- Structural Retrofitting of old building or heritage sites.
- Retrofitting of damaged columns or beams where the load bearing capacity is required in one direction.
- Seismic Retrofitting.



Carbon Fiber Plate / Flat :

Carbon Fiber (generally 12K) flat are pultruded sheet of carbon fiber bonded with high quality resin system to provide with sufficient strength and thickness.

Code	Tensile Strength (MPa)	Tensile Strength (GPa)	Ultimate Elongation (%)	Density (g/m ²)	Breaking force (N/mm)	Ply Thickness (mm)
403-111	2000	131	1.5	1.1	3220	1.2
403-112	2400	159	1.5	1.3	3220	1.4

Application:

- Old Buildings or Structures Retrofitting.
- Seismic Retrofitting.
- Strengthening of the structures.



Carbon Fiber Chopped Strands:

Code	405-100
Chopped Length (mm)	3mm, 6mm, 12mm, 20mm
Carbon Content (%)	95
Filament Diameter (μm)	7-10
Tensile Strength (MPa)	3600 – 3800
Tensile Modulus (GPa)	220 – 240
Elongation (%)	1.5
Density (g/cm ³)	1.76
Colour	Black

Applications:

- Concrete Reinforcement.
- Concrete Strengthening



Carbon Fiber Rebars (CFRP):

Carbon FRP Rods is a family of high strength, pre-manufactured composite carbon/ resin rods. These rods are used as internal or external reinforcement providing additional strength and stiffness to concrete and masonry structural elements.

Code	404 -100
Diameter (mm)	8, 10, 12, 18, 20, 24
Density (g/cm ³)	1.6 – 1.8
Tensile Strength (MPa)	1800 – 2200
E-Modulus (GPa)	140 – 155
Elongation (%)	1.3 – 1.5

Application:

- NSM Structural Strengthening.
- Masonry Strengthening.
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BASALT FIBER

Basalt Fiber Bidirectional Cloth:

Basalt fiber compared with carbon fiber, aramid fiber UHMWPE and other high-tech chemical fiber also has excellent performances such as good heat resistance, oxidation, noise insulation, filtration, anti-compression strength and high shear strength. It is able to be used in a variety of environments and cost-effective in addition to features such as high strength and high modulus.

Code	Reinforcement Yarn		Weave Pattern	Fiber Count (10mm)		Weight (g/m ²)	Thickness (mm)
	Warp	Weft		Warp	Weft		
601-111	80tex	80tex	Plain / Twill	10	10	200	0.20
601-112	300tex	300tex	Plain / Twill	5	5	300	0.32
601-113	300tex	300tex	Plain / Twill	7	7	420	0.36



Application:

- Old Buildings or Structures Retrofitting.
- Seismic Retrofitting.
- Strengthening of the structures.

Basalt Fiber Unidirectional Cloth:

Basalt Unidirectional Fabrics are a sorts of high performance engineering bonded structural strengthening of concrete, masonry or wood members. They are used in conjunction with an appropriate levelling mortar or putty and structural adhesive to improve the flexural or shear strength of the member.

Code	Tensile Strength (MPa)	Tensile Strength (GPa)	Elongation (%)	Weight (g/m ²)	Thickness (mm)
602 -111	2100	105	2.6	200	0.100
602 -112	2100	105	2.6	300	0.220
602 -113	2100	105	2.6	400	0.36



Application:

- Reinforcement and repair of the construction and bridge.
- Seismic Retrofitting.

Basalt Fiber Rebars:

The basalt fiber rebar is an ideal advanced material to replace steel and glass rebar. It can provide different size and appearance bars to meet clients demanding

Code	603 -100
Diameter	8mm, 10mm, 12mm
Tensile Strength (Mpa)	780 – 880
Elastic Modulus (GPA)	58
Elongation (%)	2.6
Density (g/cm^3)	1.9-2.1

Application:

- A. NSM Structural Strengthening.
- B. Masonry Strengthening



Basalt Fiber Chopped Strands:

Code	604 - 100
Chopped Length (mm)	3mm, 6mm, 12mm, 18mm, 24mm
Filament Diameter (μm)	7-13
Tensile Strength (MPa)	1850 – 2800
Tensile Modulus (GPa)	60-85
Elongation (%)	1.5
Density (g/cm^3)	1.76
Colour	Black

Application:

- Concrete Reinforcement.
- Concrete Strengthening.



GLASS FIBER- AR

Fiberglass Bidirectional Cloth for Reinforcement:

Code	Weave	Density	Weight (GSM)	Thickness (mm)	Width (Mtr)	Colour
101-111	Plain / Leno	10*8	105±5	0.1	1.0	White
101-112	Plain / Leno	8*9	135±5	0.14	1.0	White
101-113	Plain / Leno	13*12	155±5	0.15	1.0	White
101-114	Plain / Leno	12*10	200±5	0.20	1.0	White

Application:

- Old Buildings or Structures Retrofitting.
- Seismic Retrofitting.
- Strengthening of the structures.



Fiberglass Unidirectional Cloth for Reinforcement:

Code	Tensile Strength (MPa)	Tensile Strength (GPa)	Elongation (%)	Weight (g/m ²)	Thickness (mm)
102 -111	950	80	5.0	450	0.45
102 -112	950	80	5.0	650	0.65
102 -113	950	80	5.0	950	0.95

Application:

- Structural Retrofitting of old building or heritage sites.
- Retrofitting of damaged columns or beams where the load bearing capacity is required in one direction.



Fiberglass Mesh Cloth for Waterproofing:

Code	Mesh (mm)	Weave	Tensile Warp/Weft	Weight (GSM)	Width (Mtr)	Resin Content (%)
103-111	2.5 x 2.5	Leno	<550	45	1.0-2.0	16
103-112	5.0 x 5.0	Leno	<650	60	1.0 – 2.0	16
103-113	5.0 x 5.0	Leno	<740	85	1.0 – 2.0	16
103-114	5.0 x 5.0	Leno	<775	100	1.0 – 2.0	16
103-115	10.0 x 10.0	Leno	<800	110	1.0 – 2.0	16
103-116	5.0 x 5.0	Leno	<875	130	1.0 – 2.0	16
103-117	5.0 x 5.0	Leno	<950	145	1.0 – 2.0	16
103-118	5.0 x 5.0	Leno	>1050	160	1.0 - 2.0	16

Application:

- Waterproofing.
- Control the dampness to spread
- Heat Insulation.



Alkaline Resistance Fiberglass Chop Strand:

Code	104-100
Moisture Content (%)	<0.20
Combustible Matter Content(%)	0.8 – 2.0
Tensile Breaking Strength (N)	>0.25
Chopped Length	3mm, 6mm, 12mm,18mm, 24mm

Application: Concrete Reinforcement



Aramid Bidirectional Cloth:

Code	Fiber	Tensile Strength (MPa)	Weave	Denier	Weight (GSM)	Ends/Inch (fil)	Thickness (mm)
701-111	Aramid	2700	Plain	1000	9	200	0.26
701-112	Aramid	2700	Plain	3000	6.3	400	0.58

Area Of Application:

- Old Buildings or Structures Retrofitting.
- Seismic Retrofitting.
- Strengthening of the structures.



Aramid Unidirectional Cloth:

Code	Weave	Tensile Strength (MPa)	Tensile Modulus (GPa)	Weight (GSM)	Thickness (mm)
702-111	Unidirectional	2900	110	400	0.286

Application:

- Structural Retrofitting of old building or heritage sites.
- Retrofitting of damaged columns or beams where the load bearing capacity is required in one direction.



PHYSICAL & MECHANICAL COMPARISON

Item	Engineered Fibers					
	Steel Fiber	PP Fiber	Glass Fiber	Basalt Fiber	Aramid Fiber	Carbon Fiber
Density (g/m^3)	7.8	0.91	2.54	2.63	1.45	1.78
Tensile Strength (MPa)	600 - 900	420	950 - 1500	2200 - 3850	2900 - 3430	3500 - 6000
Elastic Modulus (GPa)	250	3.50	72.50	75 - 90	70 - 140	230 - 430
Elongation at break (%)	-----	10	4.7	3.1	1.5 - 2.0	1.5 - 2.0
Softening Point (°C)	800	100	850	1050	270	-----
Working Temperature (°C)	500	60	380	-260 - 650	250	500
Temporary Temperature (°C)	950	120	1000	1100	500	800
Thermal Conductivity ($W/m^{\circ}K$)	30 - 50	0.17 - 0.22	1.0-1.5	0.03 - 0.036	0.035 - 0.05	20-50

(ALL THE VALUES ARE DERIVED FROM MANUFACTURER'S DATA)



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