

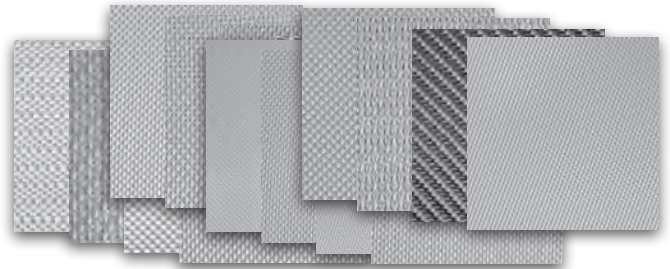


Fabrics, Fillers & Bagging

Fiberglass Fabrics

Used to construct laminate plastic parts and tooling with epoxy and polyester resins, Freeman fiberglass fabrics are first quality materials manufactured by BGF and are compatible with both epoxy and polyester resin systems.

Available by the yard (unless otherwise noted) and in full rolls.



Fiberglass Fabrics Specifications

Style	Weight (oz./sq.yd)	Weave	Thickness (inches)	Yarn Description - Warp*	Yarn Description - Fill*	Yarns Per Inch (Ends x Picks)	Breaking Strength - Warp (lbs/in.)	Breaking Strength - Fill (lbs/in.)	Finish
120	3.12	4 HS	0.005	ECD 450 1/2	ECD 450 1/2	60 X 58	105	87	504 Volan
1522	3.64	Plain	0.006	ECG 150 1/2	ECG 150 1/2	24 X 22	65	60	504 Volan
3733	5.75	Plain	0.008	ECG 37 1/0	ECG 37 1/0	18 X 18	150	115	504 Volan
7533	5.90	Plain	0.009	ECG 75 1/2	ECG 75 1/2	18 X 18	110	100	504 Volan
2532	7.00	Plain	0.011	ECG 25 1/0	ECG 25 1/0	16 X 14	150	100	504 Volan
7532	7.10	Plain	0.010	ECG 75 1/3	ECG 75 1/3	16 X 14	135	100	504 Volan
7725	8.50	2x2 Twill	0.010	ECG 75 1/0	ECG 75 1/0	54 X 18	-	-	504 Volan
7725 Black	8.70	2x2 Twill	0.010	ECG 75 1/0	ECG 75 1/0	54 X 18	-	-	A454
7781	8.71	8 HS	0.009	ECDE 75 1/0	ECDE 75 1/0	57 X 54	242	231	504 Volan
1800	9.30	Plain	0.012	ECK 18 1/0	ECK 18 1/0	16 X 13	400	300	Volan
7500	9.64	Plain	0.015	ECG 37 1/2	ECG 37 1/2	16 X 14	235	215	504 Volan
7544	18.23	2 End Plain	0.021	ECG 37 1/2	ECG 37 1/4	27 X 14	450	390	504 Volan
7587	20.10	Mock Leno	0.030	ECG 37 1/2	ECG 37 1/2	39 X 21	420	215	504 Volan
1597	38.00	Triple Plain	0.039	ECG 37 1/4	ECG 37 1/4	30 X 30	700	600	504 Volan

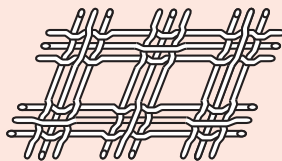
*E = E Glass C = Continuous filament D = 5 micron diameter DE = 6 micron diameter G = 9 micron diameter H = 10 micron diameter K = 13 micron diameter

Types of Weaves Available:

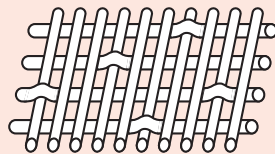
Plain – The warp (length-wise) and fill (cross-wise) yarns cross over and under each other. This weave has the maximum number of interlacings, the most crimp, and is the most stable weave. It is excellent for use in flat panel laminates.



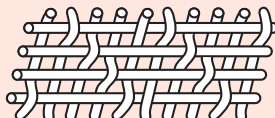
Mock Leno – The yarns in this type run in groups in both warp and fill, locking each other in place at the interlacings. This style gives maximum thickness, good dimensional stability and medium-stiff drapeability. Excellent in tooling applications.



Satin – The warp yarn crosses over four or more fill yarns, under one, over four, etc. Very drapeable, it conforms well to contoured surfaces in manufactured parts. Often used to reinforce plastics due to high bidirectional strength.



Triple Plain – This special weave features very good drapeability and conforms readily to contoured plains.



3 oz. Fiberglass Cloth (Style 120)

This fiberglass cloth is tightly woven and has a soft, smooth surface, making it ideal for demanding applications where print-through must be minimized or avoided. This cloth conforms easily to contoured surfaces and compound curves. It is commonly used in aerospace and other high quality fabrications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054152	3 oz. – 4 HS Weave Cloth	38"	500

4 oz. Fiberglass Cloth (Style 1522)

This lightweight fiberglass cloth works well for most light-duty applications where a clear wet-out is required. Sometimes referred to as "deck cloth," it is popular in the construction of lightweight models, RC aircraft, surfboards, sailboards, and canoes. It is frequently used as a surfacing fabric to stop print through when backed by layers of heavier fabric in molded parts.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054096	4 oz. – Plain Weave	50"	125

6 oz. Fiberglass Cloth (Style 3733)

This fabric is a flexible fabric that wets-out transparently and is well suited to a wide range of lightweight, general purpose applications including laminating, reinforcing and sheathing / waterproofing. It is also widely used in boat building, cedar strip canoes, and lightweight repairs.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054093	6 oz. – Plain Weave	38"	125

Fiberglass Fabrics [CONT'D.]

6 oz. Fiberglass Cloth (Style 7533)

This fabric is well suited to a wide range of lightweight, general purpose applications including small craft boat building, reinforcing, sheathing/waterproofing, and lightweight tooling.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054089	6 oz. – Plain Weave	38"	125
054087	6 oz. – Plain Weave	50"	125

7 oz. Fiberglass Cloth (Style 2532)

This is an easy to use, medium weight cloth that is commonly referred to as "boat cloth" because of its wide range of marine construction, waterproofing, and repair applications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054082	7 oz. – Plain Weave	50"	125

7 oz. Fiberglass Cloth (Style 7532)

This is an easy to use, medium weight cloth that is widely used in marine construction and repairs and tooling applications. Available in full roll only.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054086	7 oz. – Plain Weave	38"	125

8.5 oz. Fiberglass Cloth (Style 7725)

This cloth is characterized by its diagonal weave pattern (2 x 2 twill), which is highly desired for its cosmetic appearance. It is a highly conformable fiberglass cloth, allowing it to fit in tight areas and around complex shapes, and is used in many high performance applications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054098	8.5 oz. – 2x2 Modified Twill	38"	125

8.7 oz. Black Fiberglass Cloth (Style 7725)

This is a medium weight fiberglass cloth for those applications where the "look" of carbon fiber cloth is desired but the superior strength to weight ratio of carbon fiber is not required. This black fiberglass cloth features a 2x2 twill weave (two over and two under) and maintains the highly conformable characteristics of other 7725 style cloth, allowing it to fit into tight areas and around complex shapes.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054100	Black 8.5 oz. – 2x2 Modified Twill	38"	125

8.8 oz. Fiberglass Cloth (Style 7781)

This tightly woven fiberglass cloth is used where a high glass to resin ratio is required, producing a stronger, lighter composite than is possible with a plain weave. Also, its eight-harness satin weave pattern enables it to conform around curved surfaces more easily than a plain weave, making it a popular choice in aerospace and other high end applications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054153	8.8 oz. – 8 HS Weave	50"	125

10 oz. Fiberglass Cloth (Style 7500)

This is the most popular medium weight fiberglass fabric, featuring an excellent balance of cost, weight, and strength. Its well-known versatility makes it popular for tooling, FRP boat construction, sandwich core panels, waterproofing and other high-strength layup applications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054144	10 oz. – Plain Weave	38"	125
054091	10 oz. – Plain Weave	50"	125

10 oz. Fiberglass Cloth (Style 1800)

This is an economical medium weight tooling fabric, used in FRP boat construction, tooling, and other layup applications.

Catalog Number	Description	Width	Full Roll Length (Yds.)
404450	10 oz. – Plain Weave	60"	125

18 oz. Fiberglass Cloth (Style 7544)

This heavy duty cloth features a plain weave that is less "open" than a mock leno weave, resulting in a higher glass to resin ratio. It is primarily used in place of multiple layers of a medium weight fabric when a rapid build-up is required. Since heavier weight fiberglass fabrics do not conform to tight radii as easily as medium weight fabrics, they are better suited for flat or slightly curved shapes, and/or as back-up layers behind lighter surfacing layers.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054147	18 oz. – 2 End Plain Weave	38"	125

20 oz. Fiberglass Cloth (Style 7587)

This heavy duty cloth features a mock leno weave that is more "open" than a plain weave, making it easier to wet-out. It is primarily used in place of multiple layers of a medium weight fabric when a rapid build-up is required. Since heavier weight fiberglass fabrics do not conform to tight radii as easily as medium weight fabrics, they are better suited for flat or slightly curved shapes, and/or as back-up layers behind lighter surfacing layers.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054148	20 oz. – Mock Leno Weave	38"	80

38 oz. Fiberglass Cloth (Style 1597)

This is our heaviest fiberglass cloth and features a triple weave. It is primarily used with epoxy in applications where a very strong, rapid build-up is required or to reinforce wood. Since heavier weight fiberglass fabrics do not conform to tight radii as easily as medium weight fabrics, they are better suited for flat or slightly curved shapes, and/or as back-up layers behind lighter surfacing layers.

Catalog Number	Description	Width	Full Roll Length (Yds.)
054151	38 oz. – Triple Plain	38"	50

Fiberglass Tapes (8.75 oz)

Plain weave fiberglass tape in various widths used with fiberglass cloth or separately to laminate plastic tooling for exact duplication applications. Material is manufactured with bound/hemmed edges and a 627 silane finish. Sold in full rolls only.



Catalog Number	Description	Full Roll Length (Yds.)
054129	1" Fiberglass Tape	50
054130	2" Fiberglass Tape	50
054131	3" Fiberglass Tape	50
054132	4" Fiberglass Tape	50
054133	6" Fiberglass Tape	50
054134	12" Fiberglass Tape	50



Other Fiberglass Reinforcements

Fiberglass Strand

Ideal for use with Repro Laminating Resin or epoxy laminating resins where a faster layup is required. Fiberglass strand is also easier to apply than cloth around irregular areas.

Catalog Number	Description	Net Wt. (Lbs.)
054074	1/8" Fiberglass Strand	5
054072	1/8" Fiberglass Strand	55
054073	1/4" Fiberglass Strand	5
054071	1/4" Fiberglass Strand	50

Fiberglass Veil Cloth

Flexiveil 130 Fiberglass Veil Cloth is a non-woven, continuous-strand fiberglass lightweight mat that provides a resin rich surface reinforcement to fiberglass gel coats or epoxy surface coats. This product will strengthen the surface, help prevent print-through of woven reinforcing layers of fiberglass cloth, shield against corrosion and stress, and protect against excessive wear. This product is made to conform easily to contoured surfaces, is 10 mil thick (0.010"), and is manufactured using A glass for superior corrosion and chemical resistance.

Catalog Number	Description	Width	Length
054136	Flexiveil 130 (10 mil)	40"	50'
054135	Flexiveil 130 (10 mil)	40"	1200'

Fiberglass Woven Roving

This heavy fiberglass cloth allows for easy hand or machine layups of strong, yet economical laminations. It is often used along with other types of fiberglass reinforcements to fabricate large components for boats, automobiles, and home furnishings.

Catalog Number	Description	Width
404800	Woven Roving 18 oz.	60"

Stitchmat

Also referred to as Biaxial Mat, Stitchmat is a heavy 18 ounce woven roving, stitched to a light 3/4 ounce fiberglass mat. The mat helps hold the roving together during cutting and laminating. Used mainly with polyester laminating resins for building laminate strength and thickness.

Catalog Number	Description	Width	Length
404748	Stitchmat 18 oz. roving with 3/4 oz. mat	50"	76 yards

Fiberglass Chopped Strand Mat

An unwoven reinforcement fabric that is manufactured from chopped fiberglass strands secured with a powder binder. Compatible with polyester, vinyl ester, and epoxy resins, this product is most commonly used in the hand lay up process. Ideal for constructing a wide variety of laminated parts.

Catalog Number	Description	Width	Length
404830	1.5 oz. Chopped Strand Mat	38"	200'
404835	1.5 oz. Chopped Strand Mat	50"	200'

Lengths are an approximation.

Kevlar® Fabrics

Kevlar fiber, (also known as aramid fiber) is most widely known for its superior resistance from impact, fatigue, wear, and tear. All of our Kevlar woven fabrics are made with Kevlar 49, which is the structural grade of Kevlar material for composite reinforcement (as opposed to Kevlar 29, which is the ballistic grade material).

Kevlar is used extensively in the manufacture of sporting goods equipment, marine vessels of all sizes, and throughout the automotive and aerospace industries. It is lighter than fiberglass, but heavier than carbon fiber. It is often used in conjunction with either fabric to improve the toughness, flexibility, abrasion resistance, and most importantly, impact resistance of a composite part.

Kevlar will degrade when exposed to UV light, so accommodation should be made in part design or choice of matrix materials and additives.

Kevlar is a registered trademark of DuPont.

1.7 oz. Kevlar Cloth – Plain Weave

This is our thinnest and lightest Kevlar cloth, used in many smaller applications or in larger composite applications that require the performance of Kevlar with the least amount of additional weight or part thickness.

Finish	618
Warp	195 T965 Kevlar 49
Fill	195 T965 Kevlar 49
Construction (Ends X Picks)	34 X 34 (per inch)
Breaking Strength:	200 lb / in (in both directions)
Thickness	0.004 in

Catalog Number	Description	Width
404301	Kevlar – 1.7 oz. (Style 5120)	38"

5 oz. Kevlar Cloth – Plain Weave

This is our standard weight Kevlar fabric in plain weave form. The plain weave provides uniform properties throughout and is a bit stiffer than the highly conformable 4-harness satin weave, making it easier to handle.

Finish	618
Warp	1140 T965 Kevlar 49
Fill	1140 T965 Kevlar 49
Construction (Ends X Picks)	17 X 17 (per inch)
Breaking Strength:	650 lb / in (in both directions)
Thickness	0.01 in

Catalog Number	Description	Width
404306	Kevlar – 5 oz. (Style 5281)	38"

5 oz. Kevlar Cloth – 4HS Weave

This is our standard weight Kevlar fabric in 4-harness satin weave form. The 4HS weave provides greater conformability for working with irregular shapes and in corners. It will, however, be a little more difficult to handle than the plain weave fabric.

Finish	618
Warp	1140 T965 Kevlar 49
Fill	1140 T965 Kevlar 49
Construction (Ends X Picks)	17 X 17 (per inch)
Breaking Strength:	650 lb / in (in both directions)
Thickness	0.01 in

Catalog Number	Description	Width
404312	Kevlar – 5 oz. (Style 5285)	38"

Carbon Fiber Reinforcements

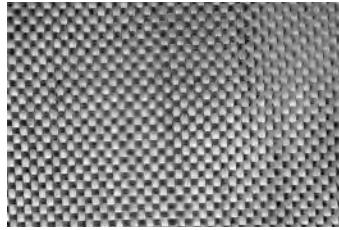
Carbon fiber fabric is well known as one of the strongest and stiffest reinforcement materials available. While more expensive than glass, it easily justifies its premium price when used in high performance applications.

All Freeman carbon fabrics are first quality materials manufactured by BGF and made exclusively from polyacrylonitrile (PAN) precursors, thus making them suitable for all high performance applications.

Available by the yard and in full rolls.

3K Carbon Fiber Cloth – Plain Weave

This is our lightest carbon fiber cloth. It features a plain weave (the one over and one under pattern gives it a checkerboard appearance) that is commonly used by manufacturers of light-weight aerodynamic parts. While not as drapable as the 2x2 twill weave, it is easier to handle.

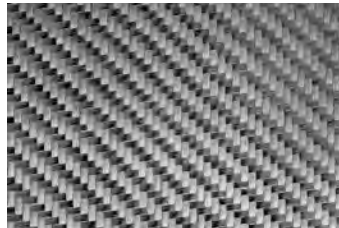


Warp	3K
Fill	3K
Construction (Ends x Picks)	12 x 12
Weight (oz./sq.yd)	5.7

Catalog Number	Description	Width	Full Roll Length (Yds.)
404005	3K Plain Weave	50"	100

3K Carbon Fiber Cloth – 2x2 Twill Weave

This is our lightest carbon fiber cloth that features the popular 2x2 twill weave (the two over and two under pattern gives it a diagonal appearance) that many recognize as “the look” of carbon fiber. This weave also makes it more drapable, yet more delicate to handle.



Warp	3K
Fill	3K
Construction (Ends x Picks)	13 x 13
Weight (oz./sq.yd)	6.2

Catalog Number	Description	Width	Full Roll Length (Yds.)
404015	3K 2x2 Twill Weave	50"	100

6K Carbon Fiber Cloth – 2x2 Twill Weave

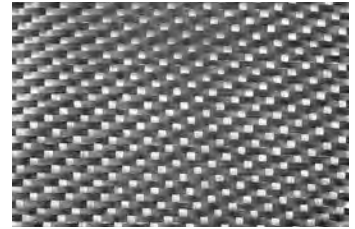
This medium weight carbon fiber cloth features the popular 2x2 twill weave (the two over and two under pattern gives it a diagonal appearance) that many recognize as “the look” of carbon fiber. However, since it is not as drapable as the 3k carbon cloth, it is more often used in structural applications.

Warp	6K
Fill	6K
Construction (Ends x Picks)	12 x 12
Weight (oz./sq.yd)	11.2

Catalog Number	Description	Width	Full Roll Length (Yds.)
404020	6K 2x2 Twill Weave	50"	100

6K Carbon Fiber Cloth – 5HS Weave

This medium weight carbon fiber cloth features a five harness satin weave which gives it higher drapability than the 6K 2x2 twill weave.



Warp	6K
Fill	6K
Construction (Ends x Picks)	12 x 12
Weight (oz./sq.yd)	11.2

Catalog Number	Description	Width	Full Roll Length (Yds.)
404010	6K 5HS Weave	50"	100

12K Carbon Fiber Cloth – 2x2 Twill Weave

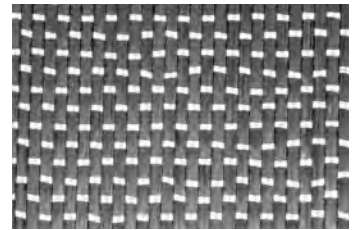
This heavy duty carbon fiber cloth features the popular 2x2 twill weave, giving it adequate drapability for its size. While more difficult to form than lighter carbon cloths, this fabric enables rapid buildup, making it ideally suited for the construction of flat parts with high strength and stiffness requirements.

Warp	12K T300
Fill	12K T300
Construction (Ends x Picks)	11 x 11
Weight (oz./sq.yd)	19.2

Catalog Number	Description	Width	Full Roll Length (Yds.)
404030	12K 2x2 Twill Weave	50"	100

Unidirectional Carbon Fiber Tapes

These tapes are made from filaments of carbon that are flat (not twisted, like yarns), and provide the strengths and stiffness of carbon fiber in one direction only, thus enabling the maximum precision in orientation. Sold by the yard.



Warp	12K
Fill	G150 Fiberglass
Construction (Ends x Picks)	11 x 8
Weight (oz./sq.yd)	11.4

Catalog Number	Description	Full Roll Length (Yds.)
404060	1" Unidirectional Carbon Tape	100
404062	2" Unidirectional Carbon Tape	100
404064	3" Unidirectional Carbon Tape	100
404066	4" Unidirectional Carbon Tape	100
404068	6" Unidirectional Carbon Tape	100



Tooling Plastics Fillers

Aluminum Fillers

Freeman offers a wide range of aluminum fillers that are commonly used with epoxies and other tooling resins. Selection of the proper filler for specific applications is largely dependent on the particle size of the filler.



Aluminum Powder is typically added to resin systems in smaller concentrations (up to 10%) for appearance purposes or to increase machinability or wear resistance. The other sized fillers are used to reduce exotherm, increase casting thickness, and reduce shrinkage. The size of the filler used depends on the size of the tool and other specific requirements. The sizes, from smallest to largest, are:

	Particle Size	Mesh	Description
Aluminum Powder	0.0006"	N/A	Fine powder
Aluminum Sand	0.006" – 0.040"	100 – 18	Sand
Aluminum Grain	0.063" (diameter) x 0.25" – 0.375" long	N/A	Cut wire
Aluminum Spheres	0.020" – 0.074"	30 – 10	Coarse sand
Aluminum Shot	0.125", 0.25", & 0.30"	N/A	Flattened and round pellets
Aluminum Puffs	0.25" to 0.375"	N/A	Flattened pellets

Catalog Number	Description	Net Wt. (Lbs.)
406383	Aluminum Powder (Mia 82)	2.5
056230	Aluminum Powder	40
059015	Aluminum Sand	2.5
054497	Aluminum Sand	50
056234	Aluminum Grain	50
059010	Aluminum Spheres	2.5
054495	Aluminum Spheres	50
059005	Aluminum Shot	2.5
054491	Aluminum Shot	50
054493	Aluminum Puffs	50

Ren DT 081 & Ren DT 082 Liquid Tooling Fillers

DT-081 is a low density filler for use with RenCast 6426 or epoxy laminating resins as a lightweight back-up material.

DT-082 is a high density filler for use with RenCast 6426-1, RenCast 6470 or epoxy laminating resins as a back-up material.

Catalog Number	Description	Availability	Net Wt. (Lbs.)
056235	Ren DT 081 Low Density Fill	Bag	50
056236	Ren DT 082 High Density Fill	Pail	33

Alumina Trihydrate (ATH)

Alumina Trihydrate is used as a filler for epoxy, urethane, or polyester resins, where fire retardant properties or increased thermal conductivity are required. This material is white in color.

Catalog Number	Description	Availability	Net Wt. (Lbs.)
406372	Mia 67 Alumina Tri Hydrate	Quart	2
406374	Mia 67 Alumina Tri Hydrate	2 Quart	3.75
406376	Mia 67 Alumina Tri Hydrate	Gallon	11.5

Walnut Shells

Low-cost material used to extend the resin and reduce the weight of cast parts. Easily mixed into epoxy and polyurethane resins. This filler will not sink to the molded surface of most plastics due to its light density.

Catalog Number	Description	Availability	Net Wt. (Lbs.)
054488	Walnut Shells 8/12 Mesh	2 Quart	2.5
054490	Walnut Shells 8/12 Mesh	Bag	50

Glass Bubbles

Glass Bubbles are very light-weight, hollow glass spheres that may be added to epoxy, urethane, or polyester resins to make them lighter in weight, shrink less, and machine easier. Depending on the degree of filler added, paste consistencies may be obtained.



Catalog Number	Description	Availability	Net Wt. (Lbs.)
406352	Mia 65 Glass Bubbles	Quart	0.75
406354	Mia 65 Glass Bubbles	2 Quart	0.75
406356	Mia 65 Glass Bubbles	Gallon	1.1

Calcium Carbonate

Calcium Carbonate is a white, powder-type filler that may be added to epoxy or polyester resins to reduce costs, reduce shrinkage, increase viscosity, and/or improve physical properties.

Catalog Number	Description	Availability	Net Wt. (Lbs.)
406312	Mia 61 Calcium Carbonate	Quart	1.9
406314	Mia 61 Calcium Carbonate	2 Quart	3.7
406316	Mia 61 Calcium Carbonate	Gallon	10

Ceramic Spheres

Ceramic Spheres are hollow light weight fillers used to reduce weight and shrinkage in epoxy, urethane, or polyester resins. Gray in color.



Catalog Number	Description	Availability	Net Wt. (Lbs.)
406342	Mia 64 Ceramic Spheres	Quart	0.8
406344	Mia 64 Ceramic Spheres	2 Quart	1.7
406346	Mia 64 Ceramic Spheres	Gallon	4.8
412415	Ceramic Spheres (Extendspheres SG)	Bag	50

Milled Glass Fibers

Milled Glass Fibers are finely cut fiberglass filaments that are used for thickening epoxy, polyester, or urethane resin systems, or to increase their physical and mechanical properties. Also, this material may be used to promote adhesion when applying additional laminations to a cured laminate.



Catalog Number	Description	Availability	Net Wt. (Lbs.)
406362	Mia 66 Glass Fiber	Quart	1.5
406364	Mia 66 Glass Fiber	2 Quart	3
406366	Mia 66 Glass Fiber	Gallon	8
054075	Milled Glass Fibers (Glass Flock) 1/32" Long	Bag	50
056229	Ren RP 32 Glass Fibers	Box	50

Tooling Plastics Fillers [CONT'D.]

Cotton Flock

Also referred to as milled cotton fibers, cotton flock is used as a filler to thicken epoxy resins or to promote adhesion between laminate layers. It offers dimensional stability and enhance compound strength. It is also used for patching and repairing surfaces, although it is not recommended for boat hull repairs. This filler is best suited in areas that will not be submerged or in constant contact with water.



Catalog Number	Description	Availability	Net Wt. (Lbs.)
406302	Mia 60 Cotton Flock	Quart	0.75
406304	Mia 60 Cotton Flock	2 Quart	1.2
406306	Mia 60 Cotton Flock	Gallon	2.5
054080	Cotton Flock (Milled Cotton Fibers)	Box	50

Fumed Silica

Fumed Silica—sometimes referred to as Cab-O-Sil (registered trademark of Cabot) or Aerosil (registered trademark of Degussa)—is a thickening agent that may be added to epoxy, urethane, or polyester resins to increase the viscosity. High filler loading will produce paste-like consistencies, ideal for creating fillets, repair materials, or making fairing compounds smoother and easier to apply.



Catalog Number	Description	Availability	Net Wt. (Lbs.)
406332	Mia 63 Fumed Silica	Quart	1.5
406334	Mia 63 Fumed Silica	2 Quart	0.23
406336	Mia 63 Fumed Silica	Gallon	7
054077	Fumed Silica (Cab-O-Sil M-5)	Bag	10
412034	Fumed Silica (Aerosil 200)	Bag	10

Wood Flour

Wood flour is mainly used to repair or bond wood. It thickens epoxy laminating resin to provide less sag and more bond strength. It is ideal for making fillets in sharp corners, filling gaps in wooden structures, and doing any type of wood bonding. The particles are free-flowing and easy to disperse in the resin.

Catalog Number	Description	Availability	Net Wt. (Lbs.)
406322	Mia 62 Wood Flour	Quart	0.5
406324	Mia 62 Wood Flour	2 Quart	1
406326	Mia 62 Wood Flour	Gallon	2.75

Graphite Powder

Graphite Powder is a black filler that may be added to epoxy, urethane, or polyester resins. This very hard product will add abrasion resistance and provide a low-friction surface to the finished part.

Catalog Number	Description	Availability	Net Wt. (Ounces)
406392	Mia 84 Graphite Powder	Quart	12

Dyes and Pigments

Freeman Color Tints

A highly concentrated coloring tint for urethane and epoxy resin systems. For urethanes mix thoroughly into the part B or Polyol side before combining with part A. For epoxies add to the resin side before combining with the hardener. 0.2% to 0.5% can produce deep colors. May be used with clear urethanes and epoxies to obtain a transparent color.



Be certain to wear hand and eye protection, as these dyes may permanently stain objects and temporarily stain skin.

Catalog Number	Description	Color	Availability
055420	Freeman Color Tints	Yellow	2 oz.
055421	Freeman Color Tints	Green	2 oz.
055422	Freeman Color Tints	Blue	2 oz.
055423	Freeman Color Tints	Red	2 oz.
055424	Freeman Color Tints	White	2 oz.
055425	Freeman Color Tints	Black	2 oz.
055426	Freeman Color Tints	Orange	2 oz.
055427	Freeman Color Tints	Violet	2 oz.
055428	Freeman Color Tints	Brown	2 oz.

Araldite DW Coloring Pastes

Ren DW Coloring Pastes are concentrated pigments in an epoxy resin. The pigments are ideal for coloring all Ren epoxy compounds and most RenCast Polyurethane Elastomers. Additions of up to 3% by weight of color paste (based on the total weight of resin and hardener) can be made without significantly changing the cured properties of the material. The DW Pastes produce a rich, solid color and should be used in applications where the final part is designed to be opaque, not transparent.

Catalog Number	Description	Color	Availability
056244	Araldite DW 0131 Paste	White	Gallon
056245	Araldite DW 0132 Paste	Yellow	Gallon
056246	Araldite DW 0133 Paste	Red	Gallon
056247	Araldite DW 0134 Paste	Green	Gallon
056248	Araldite DW 0135 Paste	Blue	Gallon
056250	Araldite DW 0137 Paste	Black	Gallon

Polyester Coloring Pastes

Wide variety of concentrated polyester pigments used to color polyester gelcoats, laminating resins, and repair materials. Maximum concentration of pigment should not exceed 3%. Used with polyester systems only, not compatible with epoxies or urethanes.

Catalog Number	Description	Color	Availability
412240	Mia Color Paste	White	100 mL
412242	Mia Color Paste	Blue	100 mL
412246	Mia Color Paste	Beige	100 mL
412248	Mia Color Paste	Brown	100 mL
412250	Mia Color Paste	Yellow	100 mL
412252	Mia Color Paste	Red	100 mL
412256	Mia Color Paste	Black	100 mL
412258	Mia Color Paste	Gray	100 mL
412260	Mia Color Paste	Green	100 mL
412215	Bulk Color Paste	Black	1 kg
412225	Bulk Color Paste	Gray	1 kg
412230	Bulk Color Paste	Beige	1 kg
412217	Bulk Color Paste	Blue	1 kg



Mia Vacuum Bagging Supplies

Mia Vacuum Bag and Release Film

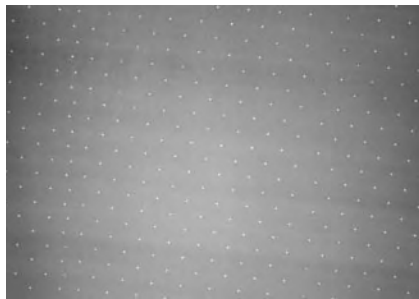
Mia Vacuum Bag and Release Film is a product that can be used both as the vacuum bag as well as an effective release film. Ideal for polyester, vinylester, epoxy, and phenolic resins, it has a temperature resistance to 285°F. Polyolefin film, green in color.



Catalog Number	Description	Thickness	Width
400500	Mia Vacuum Bag and Release Film	0.002"	60"

Mia Perforated Release Film

Mia Perforated Release Film is a polyolefin film that contains uniformly spaced perforations. These 0.015" holes, that are staggered on 1/4" centers, permit the excess resin from the laminate to flow through the film and be absorbed in the bleeder cloth. Most commonly used on wet lay-ups, where excess resin is typical.



Catalog Number	Description	Thickness	Width
400502	Mia Perforated Release Film	0.002"	60"

Mia Stitch Peel Ply Fabric

This nylon fabric is used in the laminating process and is placed directly against the back side of a laminated tool. This provides a rough surface that may be readily bonded to. Use of this product in the bagging process will save valuable time in sanding or abrading the surface. Mia Stitch Peel Ply also has "red tracers" to easily identify the peel ply after the part is cured, so the risk of forgetting to remove the peel ply is minimized.



Catalog Number	Description	Thickness	Width
406800	Mia Stitch Peel Ply Fabric	0.006"	60"

Mia Breather / Bleeder Fabric

This multi-purpose product may be used as a bleeder to absorb excess resin, as well as a breather to permit even air flow over the tool surface. Made from polyester, this product is ideal for the marine, automotive, and general composite industries. This product is white in color, weighs 4 oz. / sq. yd., and is suitable for a maximum temperature of 375°F.



Catalog Number	Description	Width
400505	Mia Breather / Bleeder Fabric	60"

Mia Flow Resin Infusion Media

This red polyethylene flow media is designed to provide even resin flow through the entire part during the infusion process. Mia Flow is engineered with two distinct strand layers to provide consistent channels for resin flow. The product is 0.050" thick with 1/4" mesh size openings.

Catalog Number	Description	Thickness	Width
406005	Mia Flow Resin Infusion Media	0.05"	60"

Mia Vacuum Bagging Supplies [CONT'D.]

Mia Sealant Tape

Mia Sealant Tape is designed to secure the bagging film to the tool surface. This yellow colored, synthetic rubber provides an excellent sealing surface, while still being able to be removed cleanly from metal or composite surfaces. Good up to 400°F, this product is sold in rolls 1/8" thick x 1/2" wide x 25' long.



Catalog Number	Description	Thickness	Width	Length
406665	Mia Sealant Tape	1/8"	1/2"	25'

Mia Pressure Sensitive Tape

Mia Pressure Sensitive Tape is a polyester, multi-purpose, pressure sensitive tape that uses a rubber based adhesive. This material is used for holding down vacuum bagging materials or masking off areas where excess resin flow or flash may occur. The tape is orange and temperature resistant to 350°F.



Catalog Number	Description	Thickness	Width	Length
406668	Mia Pressure Sensitive Tape	0.015"	1"	72 YD

Mia Bagging Hardware

Mia Vac Valve is a premium quality vacuum valve made from machined aluminum and comes complete with base, silicone seal, and pressure plate for quick and easy installation. Male 1/4" NPT threads.



Mia Vac Gauge is a liquid filled gauge with a range of adjustment from 30" Hg to -5" Hg. Large 2.5" diameter face with male 1/4" NPT threads.

Mia Quick Disconnect is sold as two separate items and may be purchased individually. Both are made from plated steel to provide years of service. Temperature resistance to 500°F.

Mia Vac Hose is a 3/8" I.D. x 10' long vacuum hose that may be used for low temperature applications (275°F max) or room temperature use. 1/4" male NPT fittings on both ends.

Mia Venturi Vacuum Generator is a low cost alternative to a traditional vacuum pump. This unit, when connected to 80 psi of compressed air, is able to generate a vacuum up to 25.5" Hg. It has a 1/8" NPT female connection to compressed air and a 1/4" NPT male connection to attach the vacuum hose.

Catalog Number	Description
406685	Mia Vac Valve
406670	Mia Vac Gauge
406661	Mia Male Quick Disconnect
406662	Mia Female Quick Disconnect
406680	Mia Vac Hose
406690	Mia Venturi Vacuum Generator

Core Materials

Aluminum Honeycomb Sandwich Panel

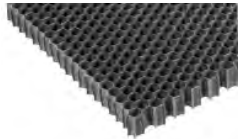
This lightweight aluminum honeycomb core is laminated on both sides with epoxy and woven fiberglass 0.018" thick to produce a strong core materials for reinforcing a laminated part. It is manufactured with a 1/4" cell, 5.2 lbs/cu. ft. density, and in 1/2", 3/4", and 1" thicknesses.



Catalog Number	Description	Thickness	Width	Length
054185	Aluminum Honeycomb	1/2"	4'	8'
054188	Aluminum Honeycomb	3/4"	4'	8'
054186	Aluminum Honeycomb	1"	4'	8'

Aramid Fiber Honeycomb Sandwich Panel

This lightweight Aramid Fiber Honeycomb Core is laminated on both sides with epoxy and woven fiberglass 0.018" thick to produce a strong core material for reinforcing a laminated part. It is manufactured using aerospace grade Aramid fiber with a 1/8" cell and 3.0 lb./cu. ft. density. It meets FAR 25.853 specification for flame retardancy.



Catalog Number	Description	Thickness	Width	Length
403706	Aramid Honeycomb	1"	4'	8'

Spherecore Core Materials

Flat material made of short polyester fibers and embedded thermoplastic microspheres for light and economical laminating jobs. It is ideal for stiffening a laminate and preventing the "print through" of woven fabrics on the part surface. Exclusively for hand layup applications similar to chopped strand mat and woven roving requirements. Sizes below are the thicknesses and full roll lengths—widths are 100cm.

Catalog Number	Description	Thickness	Length (Yds.)
403405	Spherecore	2 mm	77