INTRODUCTION

The use of composite materials in homebuilt aircraft construction got its start back in 1970 when Ken Rand introduced his KR-1 and KR-2 kits. At the same time, a young designer named Burt Rutan was completing the design of his VariViggen which was awarded the Stan Dzik trophy for design contribution at Oshkosh in 1972. Although this aircraft featured some composite construction materials, it was fairly labor intensive to build and interest was modest. Taking the canard design concept a step further and simplifying construction through the use of the moldless composite technique, Burt educated thousands of builders and future designers through his plans, construction manuals, and many seminars and convinced aircraft enthusiasts worldwide that composites were indeed the future for aviation construction. Rutan Aircraft Factory followed the tremendous success of the VariEze kit program with plans for new designs such as the Long-EZ, Defiant, and Solitaire. At the same time, Scaled, Burt’s new company specializing in design and prototype construction, was busy building proof-of-concept aircraft such as the AD-1, Grizzly, and Beech Starship. Burt continues to operate Scaled today and remains active in designing and building the aircraft of tomorrow. We hope he will someday return to the homebuilt aircraft market, and arena that allowed him endless freedom to pursue aircraft design innovation.

During 1980’s many new designers entered the homebuilt aircraft market including Nat Puffer who introduced the popular Cozy, a side-by-side version of the Long-EZ. Aircraft Spruce & Specialty Co. became the distributor of Cozy kits as it had been for the Rutan designs since 1976. Hundreds of kits were shipped worldwide, and Aircraft Spruce grew as quickly as the composite movement. At the same time, Aircraft Spruce began supplying kits and materials to designers marketing their own new designs using the new “fast-build” pre-fabricated kit concept. This type of kit program was pioneered by Tom Jewett and Gene Sheehan of Quickie Aircraft and Tom Hamilton of Glasair fame. Many new designs followed, including Lance Niebauer’s Lancair, Ken Wheeler’s Express, the Cirrus and White Lightning. Aircraft Spruce has been a supplier of materials for all of these kit programs, and looks forward to working with the designers of new composite aircraft on their kit programs in the years to come. The design sophistication and ease of construction that are offered in composite aircraft kits today have provided a way for many aviation enthusiasts to build and fly higher performance aircraft at affordable prices. What an exciting time to be involved in sport aviation!

ADVANCED COMPOSITE FABRICS

Advanced composite fabrics are those materials which have been used for a number of years in aerospace applications, replacing standard fiber-glass fabrics. Today’s materials - Kevlar, graphite, S glass and ceramics - are now making the transition from aerospace to homebuilt aircraft. Kevlar is an organic fiber which is yellow in color and soft to touch. It is extremely strong and tough and about the lightest structural fabric on the market today. Kevlar is highly resistant to impact but it is rather difficult to work with for hand layup applications and its compressive strength is considered poor. Graphite fibers are created by extreme stretching and heating of rayon fibers to change their molecular structure. Graphite has very low density (weight/unit volume), is very stiff (high modulus) and very strong (high tensile). S glass uses a different chemical formulation from standard E glass fabrics, and is stronger, tougher and stiffer than E glass. One ply of S glass can replace several plies of E glass, which can result in a stronger and considerably lighter aircraft component. Ceramic fabrics are the latest innovation in advanced composites. These fabrics produce laminates approaching the qualities of S glass plus they can withstand temperatures of almost 3000°F. Ceramic cloth can produce a very lightweight and effective firewall laminate, although at this time the cost is high. These advanced composite materials are currently being used in the production of such items as aerospace components, high-performance boats and race cars, and many revolutionary homebuilt aircraft such as the Long-EZ, Solitaire, Sea Hawk and Q200. The performance of future homebuilt aircraft will most certainly be incredible with the availability of these innovative new composite materials.

WHICH ONE DO YOU CHOOSE?

Often the choice of the materials to use for a laminate is difficult because of the required properties. One must consider the advantages of one material over another and its anticipated performance. S glass is about 30% stronger and 15% stiffer than E glass. It has 20-25% of the stiffness of graphite and is as strong, but it is also 30% heavier. S glass though, has only half the strength and stiffness of Kevlar and twice the weight. Kevlar on the other hand, is 40% stronger and 25% lighter than graphite but has only half the stiffness of graphite. Sometimes, blending different advanced composite fabrics in a laminate can achieve the proper balance of stiffness, strength and weight. Use the following six parameters listed here, from a best to a worst case, to help you decide which advanced composite fabric(s) is best for your application.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Best</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>E Glass</td>
<td>Kevlar</td>
</tr>
<tr>
<td>Weight (Density)</td>
<td>Kevlar</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Stiffness</td>
<td>Ceramic</td>
<td>E Glass</td>
</tr>
<tr>
<td>Heat</td>
<td>Ceramic</td>
<td>Kevlar</td>
</tr>
<tr>
<td>Toughness</td>
<td>Kevlar</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>Kevlar</td>
<td>Ceramic</td>
</tr>
</tbody>
</table>

Toughness Kevlar    S Glass    E Glass
Impact Ceramic    S Glass    E Glass
Heat Ceramic    S Glass    E Glass
Stiffness Graphite    Kevlar    S Glass
Cost E Glass      S Glass    Kevlar    Graphite    Ceramic
Weight (Density) Kevlar    Graphite    S Glass    E Glass    Ceramic

KEVLAR FABRIC STYLES

120-PLAIN-34x34
281-PLAIN-17x17
285-CROW FOOT-17x17

GRAPHITE FABRIC STYLES

A54-HS4
F3T282-PLAIN-12.5x12.5
F3C716-PLAIN-16x24

CERAMIC FABRIC

XC568-HS5-48X47
E-GLASS
S-GLASS

4533-PLAIN-18X18
7500-PLAIN-16X14

Prices Subject to Change Without Notice
It is important to have the entire work area including tables, foam, tools and working materials thoroughly warm before commencing. This may take 3-4 hours. An electric hair dryer may be used to warm local areas, being careful not to overheat the part or epoxy. When, due to cool temperatures, a part is slowly to wet out, a few quick passes with a hair dryer will greatly speed the layup time. Do not use a hair dryer to heat a cup of epoxy. This can give local hot spots and ruin pot life.

The epoxy system components should be stored at room temperature. Never keep resin or hardeners in a cold place, even for long-term storage. If the resin appears to crystallize and settle out it should be returned to its normal state as soon as possible, even if prompt usage is not anticipated. Placing the container of resin in hot (160-190°F.) water for several hours will usually decrystallize it and return it to a clear state. Mild agitation will accelerate the process. Leaving the resin hot for 3-5 hours after it clears will reduce its susceptibility to recrystallize. Securely close containers after use.

Never attempt any layup below 70°F. since the higher viscosity of the resin will make it more difficult to wet out the cloth. Ideal working temperature is 85°F. Keep epoxy at 75° to 85°F. Never work outside in sunlight. It’s acceptable to work in a shop with radiant heaters, as long as:

1.) The heat is diffused and the heat source does not become much hotter than the ambient.
2.) The heat is not provided by a source that generates particulates or aerosol hydrocarbons.

Never make a glass layup over a core that is not straight and smooth. The glass panel cannot take the loads if it has bumps or depressions in excess of the allowable values. A wrinkle, depression or bump in a layup which is greater than 1/16” high or low and which is more than 20% of the chord length or 20% of the spar chord is not acceptable and requires repair. A depression can usually be repaired by filling with flox to level and laying over the entire depression the amount of glass that is underneath, lapping outside the depression a distance equal to one inch per ply. Care should be taken not to lay up a depression or bump in the thick main spar caps. The transition of the spar caps into the wing fittings must be smooth and without outjogges. These precautions apply only to the flying surfaces. The fuselage and fuel tanks can have relatively large depressions or bumps without affecting structural safety. Care should be taken in the finishing process not to sand through more than one ply on the structure.

Joining foam blocks - (1) Paint a coat of epoxy (no micro) on the joining surfaces. (2) Trowel a wedge of dry micro on the center of one surface. (3) Squeeze the joining surfaces together, bringing them back and forth to obtain a thin micro joint less than 1/16” thick. It is desirable to have the micro about 3/8” low in the joint (not squeezed out). The low joint is filled with micro before glass is laid over the joint allowing a wet bond between the micro and the glass. If some does squeeze out, wipe the joint low with a mixing stick. Do not try to fill large voids with micro, as there is a possibility of exotherm damage. For a void larger than about 0.1”, fill with a sliver of foam with micro on each side.

Precaution - Be sure layups are not dry, with air present (small flecks of white). Inspect thoroughly before leaving a wet layup. A cured layup that is too dry must be rejected.

Make sure that ample micro slurry is applied over the foam, particularly the urethane. Inadequate slurry allows air to remain under the first ply, decreasing laminate peel strength and surface durability.

Hot wire cutting - A good method to use for judging wire temperatures is the appearance of the cut foam surface. A cratered or rutted surface indicates the wire is too hot. A very light “hair” of plastic strands on the surface is just right. Always adjust the temperature so that the wire will cut one inch in 4 to 6 seconds with light pressure.

Exotherm foam damage - Care must be taken to avoid heavy buildups of epoxy/micro down inside a joint that is insulated by foam, such as the assembly of the wing cores. The gap to be filled by micro when assembling any foam cores should not be thicker than 1/16”. In filling a gap greater than 0.1”, excessive weight is added and, more importantly, the large mass of epoxy/micro insulated by the foam can exotherm. Heat resulting from the exotherm can be as high as 450°F., which will melt away the foam locally and destroy the joint. White is the recommended color for composite aircraft since it absorbs very little of the sun’s heat (10%) while a black surface will heat up tremendously (95% absorption). Trim colors in noncritical areas are acceptable. Any good quality automotive enamel, lacquer, acrylic or polyurethane is acceptable. A primer-surfacer with an ultra-violet radiation barrier is recommended as an undercoating.

Caution: Do not ever wipe paint thinners on any part of the structure. Minute pin holes in the epoxy/glass skin can allow the thinners to penetrate down to the styrofoam, which dissolves in thinners.

QUALITY CONTROL

One of the unique features of the glass-foam-glass composite construction technique is the ability to visually inspect the structure from the outside. The transparency of the glass/epoxy material makes it possible to see all the way through the skins and even through the spar caps. Defects in the layup take four basic forms: (1) resin lean areas, (2) delaminations, (3) wrinkles or bumps in the fibers and (4) damage due to sanding structure away in finishing. Resin lean areas are white in appearance due to incomplete wetting of the glass cloth with epoxy during layup. The presence of minor white (lean) areas up to about 2 inches in diameter is not cause for rejection of the piece. Delaminations in a new layup may be due to small air bubbles trapped between plies during the layup. Small delaminations or bubbles up to 2” diameter may be filled by drilling a small hole into the bubble and filling the void with epoxy. Major wrinkles or bumps along more than 2” of chord are cause for rejection in the wings, canard and winglet on the VE, particularly on the top. In most cases the rejected part can be repaired by following the basic rule; Remove the damaged area and fair back the area at a slope of at least one inch per ply with a sanding block in all directions. Count the number of plies removed while sanding and replace with same, plus one more ply of BID over the entire patch.

WEAVE PATTERNS

The weave pattern describes the manner in which the warp yarns and the filling yarns are interlaced in the fabric. Plain Weave consists of one warp end woven over and under one filling pick. Plain weave is generally characterized by fabric stability with minimum pliability except at low fabric counts. Crowfoot Weaves are constructed with one warp end weaving over three and under one filling pick. It is characterized as being more pliable than either plain or basket weaves, having conformability to complex or compound curved surfaces and making possible the weaving of higher counts than plain or basket weaves.
Fiberglass cloth is exactly what the name says - glass. Fine fibers are spun from molten glass marbles, gathered into yarn and woven into a strong, supple glass fabric. It can be folded, rolled or draped, like any other loosely woven fabric - but it can be chemically transformed into solid sheets of tremendous strength. All the fiberglass fabrics listed below are volan treated for maximum strength and resistance to moisture and abrasion. They feature a weave that is tight enough for high strength, yet open enough for thorough wetting by resins.

**S-Glass**

The chemical formulation of S-glass differs from that of standard E-glass. Examples of E-glass are found in the Standard Fiberglass Cloth section of this catalog. S-glass is 30% stronger and 15% stiffer than E-glass and retains these properties up to 1500° F. S-glass is also considerably tougher than an equivalent E-glass. Other styles are available on request. Sold by the yard.

<table>
<thead>
<tr>
<th>Style</th>
<th>Part No.</th>
<th>Weight oz/sq yd</th>
<th>Width</th>
<th>Thickness</th>
<th>W x F</th>
<th>Weave</th>
<th>Price Per Lineal Yd</th>
</tr>
</thead>
<tbody>
<tr>
<td>4533</td>
<td>4533-60</td>
<td>5.8</td>
<td>60&quot;</td>
<td>.009&quot;</td>
<td>18 x 18</td>
<td>Plain</td>
<td>$16.50</td>
</tr>
</tbody>
</table>

**Glass Mat**

100% fiberglass in a non-woven state. It is used for bulk “build-up” in molding and fabricating components. Also useful for filling holes and badly damaged parts. 1.5 Oz. Weight. 38" Width.

P/N 01-06500............................ $2.84/Yd

**Knitted E-Glass Fabric**

Knitted fabrics are a relatively new format in composites. The performance of the glass is greatly enhanced by removing the interstices of the woven fabric and the crimped condition. E-glass in woven goods normally has 22,000 psi tensile strength. Layered nonwoven goods give 27,000 psi which is about a 20% improvement. Knitted glass offers greater ease of fabric orientation and saves time over multi-layered wet lay-ups.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Weight/sq yd</th>
<th>Width</th>
<th>Ply Thickness</th>
<th>Price/yd</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-00640</td>
<td>17.6 oz</td>
<td>50&quot;</td>
<td>17.0 mm</td>
<td>$7.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Uni-Directional</td>
</tr>
<tr>
<td>01-00650</td>
<td>13.4 oz</td>
<td>50&quot;</td>
<td>.021 mm</td>
<td>$5.99</td>
</tr>
</tbody>
</table>

**Nomex Honeycomb**

AHN 7800 is an Commercial Grade Nomex honeycomb particularly suited for use where resistance to corrosive attack and moisture are important. This material exhibits good strength characteristics and is fire resistant. It is available in a variety of cell sizes and densities to suit most purposes. Typical applications include lightweight non-structural bulkheads for ships, joiner panels, shelters, antennas, and auto body panels. This material is not intended for aircraft or aerospace applications. This material also exhibits good thermal insulation properties and also has good dielectric properties. This honeycomb is easily machined, formed, and shaped and well suited to adhesive bonding.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeycomb 1/8&quot; Thick, 1/8&quot; Cell 4&quot; x 8&quot;</td>
<td>01-00487</td>
<td>$189.95</td>
</tr>
<tr>
<td>Honeycomb 1/8&quot; Thick, 1/8&quot; Cell 4&quot; x 4&quot;</td>
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<td>$94.50</td>
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<tr>
<td>Honeycomb 1/4&quot; Thick, 1/8&quot; Cell</td>
<td>01-01052</td>
<td>$292.95</td>
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</table>
COMPOSITE MATERIALS

RUTAN FIBERGLASS CLOTHS

The most basic structural material in building a composite aircraft is glass cloth. The use of glass in aircraft structures, particularly structural sandwich composites, is a recent development. Glass cloth is available commercially in hundreds of different weights, weaves, strengths and working properties. Very few of these, however, are compatible with aircraft requirements for high strength and light weight. Even fewer are suitable for the hand-lay-up techniques developed by Burt Rutan for the homebuilder. The glass cloth featured here has been specifically selected for the optimum combination of workability, strength and weight. Two types of glass cloth (styles 281-38 and 285-38, UNI-Directional) are used. BID Directional P/N RA7715. UNI Directional P/N RA7725.


<table>
<thead>
<tr>
<th>Style</th>
<th>Part No.</th>
<th>Oz./Sq.Yd</th>
<th>Weight Width</th>
<th>Thickness</th>
<th>W x F</th>
<th>Weave</th>
<th>Breaking Strength Lbs/Inch</th>
<th>Price Per Lineal Yd</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>01-38100</td>
<td>1.8</td>
<td>38”</td>
<td>.0035”</td>
<td>34 x 34</td>
<td>Plain</td>
<td>260</td>
<td>$26.85</td>
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<tr>
<td>281</td>
<td>281-38</td>
<td>5.0</td>
<td>38”</td>
<td>.010”</td>
<td>17 x 17</td>
<td>Crow</td>
<td>630</td>
<td>$23.75</td>
</tr>
<tr>
<td>285</td>
<td>285-38</td>
<td>5.0</td>
<td>38”</td>
<td>.010”</td>
<td>17 x 17</td>
<td>Crow</td>
<td>630</td>
<td>$23.65</td>
</tr>
</tbody>
</table>

BIDIRECTIONAL KEVLAR

KS-400 is a unique unidirectional reinforcing material combining the benefits of Kevlar 49 with Owens-Corning Fiberglass S-2 Glass. Designed for use in laminates which must have high modulus or stiffness and tensile strength combined with light weight or density. Specifically constructed to enhance properties of wet-out behavior, bondability and impact strength in a hand-laid-up composite. As compared with woven fabrics of pure Kevlar, KS-400 should produce laminates with better fiber-resin ratios and superior stiffness. The integrity of KS-400 is maintained through fill yarns that are fine, adhesive coated Dacron or nylon that are bonded to, but not interwoven with, the unidirectional fibers. Only vinyl ester or epoxies should be used as impregnating resins. The presence of the S-2 Glass enables the fabricator to determine visually when the material is properly wet out. Resin bond is far superior to the Kevlar than to the glass. This means increased resistance to delamination. Also the presence of the S-2 Glass even in a relatively small amount increases the impact strength of the laminate significantly. In applications, it is important that the fabricator does not confuse the appearance of the cross-direction adhesive binder with air bubbles. The impregnating resin will soften this adhesive and it will flow slightly. The adhesive should not be mixed as it will not set with epoxy as it will slowly cure. A gel coat or paint covers these areas effectively. 12” Wide . P/N 01-00340 $4.55 Ft

10% Discount on 50 ft. (4 lbs) • 20% Discount on full roll, 300 ft. (24 lbs)

OFFSET KEVLAR CUTTING SHEARS

Although Kevlar has many advantages over conventional fiberglass, it is very difficult to cut. Special scissors have been developed to facilitate cutting. These scissors have a wear resistant coating which is metallurgically bonded to the steel substrate. The coating will not chip or peel off and can be sharpened. Model WR-10E-4 Shears.

PRECISION SCISSORS

Straight-edge blades easily slide through the fabric and are sharpened to the tip for smaller or appliqué cuts. Grabs the fabric and cuts cleanly, with no material folding over the blades - even when cutting left-handed. Blades fully extend into the handles for durability and better cutting stability and pressure distribution. Exceptional accuracy and retains smooth blade movement, even in heavy-use environments. Straight blades made of stainless steel (Blades are not serrated). Good for cutting stitchwork, thread, cloth, leather, fabrics, films, sign and graphics material, vehicle wraps, and more. P/N 01-01186 $18.95

INDUSTRIAL FABRIC SHEARS

Wiss No. 20W heavy-duty shears, ideal for cutting fiberglass cloth and all fabrics. Hot drop-forged steel.

Right Hand Shears . P/N 00-00397 $28.60
Left Hand Shears . P/N 00-00398 $27.95

FEATHERWEIGHT SCISSORS - Lightweight, durable, and reliable GINGHER® Scissors are lightweight, extremely sharp and comfortable. These 2-1/2 oz. scissors are perfect for use during the lay-up for a variety of purposes and can be used in great to ease clean up. We recommend saving one pair for only cutting Kevlar® and keeping a second pair for general use. P/N 00-00342 $44.65

Prices Subject to Change Without Notice

AIRCRAFT SPRUCE WEST
CORONA, CA • (877) 4-SPRUCE

AIRCRAFT SPRUCE EAST
PEACHTREE CITY, GA • (877) 477-7823

Quantity Discount: 15% on 500 Yds or more. Yardage must be on one fabric for discount, not combined. Discount on larger quantities quoted on request.
Woven graphite is a fabric introduced in recent years which has become an excellent alternative to fiberglass and Kevlar - only mils thick with great strength. In addition to its great strength, graphite fabric also has very low density and is very stiff. Although it is quite costly, the material saving is appreciable since only one course of graphite is required for 3 or 4 of fiberglass. It cuts considerably easier than Kevlar. Graphite. The excellent qualities of the graphite fabric itself give it an immediate waiting market in the aircraft building field.

Graphite fabric is stocked in the three different styles shown below. Other weights and weaves of graphite are available on a special order basis. Be sure to specify the graphite style when ordering. These carbon graphite cloths are not pre-preg fabrics.

* Warning folding for shipment can damage the filaments in the fabric. Folding will be done at customers risk and request only.

** Fiberglass tracers, which are clear when wet out. ** Fiberglass cloths, which are yellow when wet out.

### BIDIRECTIONAL WOVEN CARBON GRAPHITE

<table>
<thead>
<tr>
<th>Style</th>
<th>Part No.</th>
<th>Weight Oz./Sq. Yd.</th>
<th>Width</th>
<th>Thickness</th>
<th>W x F</th>
<th>Weave</th>
<th>Breaking Strength</th>
<th>Price /yd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>282</td>
<td>01-06971</td>
<td>3.4</td>
<td>50</td>
<td>.087</td>
<td>12X12</td>
<td>Plain</td>
<td>$29.50</td>
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<tr>
<td>284</td>
<td>01-06857</td>
<td>2.0</td>
<td>60</td>
<td>.099</td>
<td>12X12</td>
<td>Plain</td>
<td>$32.50</td>
<td></td>
</tr>
</tbody>
</table>

### UNIDIRECTIONAL CARBON 175

Construction is such that the fibers are oriented in a straight or linear manner with no twist and are able to be maintained in that condition while being impregnated by hand. The fabric is formed from rovings or "tows" of fibers similar to that used in making woven fabric. These fibers are locked into position by very fine fill (or cross machine direction) fibers. For hand lay-ups, resin may be applied by spray, brush, or by pouring action. A short napped paint roller is recommended for spreading the resin. Excess resin should always be rolled out in a direction parallel to the graphite fibers. Satisfactory for use with epoxies, polyesters, vinyl esters, and other resins. Care and cleanliness should be practiced when working with Graphite materials. Unattached graphite fibers are easily airborne. A filter mask should be worn when cutting and fabricating. Itching and irritation caused by broken filaments becoming embedded in the skin can result from filament breakage during handling. Sold by the yard Style: 715. Weight: 5.37 oz./sq. yd. Width: 35.5 in. Thickness: 6.69 mils.

* Warning folding for shipment can damage the filaments in the fabric. Folding will be done at customer's risk and request only

<table>
<thead>
<tr>
<th>Style No.</th>
<th>Width (in.)</th>
<th>Length</th>
<th>Part No.</th>
<th>Price/roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>702</td>
<td>1.5&quot;</td>
<td>12 ft roll</td>
<td>01-00218</td>
<td>$55.30</td>
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<tr>
<td>703</td>
<td>3&quot;</td>
<td>12 ft roll</td>
<td>01-00240</td>
<td>$70.75</td>
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</table>

### UNIDIRECTIONAL CARBON TAPES

These carbon fiber tapes are used to add stiffness and tensile strength in one direction without adding significant weight or thickness. These West System tapes have 12 carbon fiber bundles per inch of tape width. The bundles are held together with a polyester fill thread making the tape easy to handle. These tapes are compatible with epoxies but not with vinylester or polyester resins. #702 tape is 1.5" wide and #703 tape is 3" wide.

<table>
<thead>
<tr>
<th>Style No.</th>
<th>Width (in.)</th>
<th>Length</th>
<th>Part No.</th>
<th>Price/roll</th>
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<tr>
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<td>50 ft roll</td>
<td>01-00239</td>
<td>$145.80</td>
</tr>
<tr>
<td>703</td>
<td>3&quot;</td>
<td>50 ft roll</td>
<td>01-00241</td>
<td>$190.75</td>
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### CARBON FIBER TAPES

<table>
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<th>Style No.</th>
<th>Width (in.)</th>
<th>Length</th>
<th>Part No.</th>
<th>Price/roll</th>
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<tbody>
<tr>
<td>702</td>
<td>1.5&quot;</td>
<td>12 ft roll</td>
<td>01-00218</td>
<td>$55.30</td>
</tr>
<tr>
<td>703</td>
<td>3&quot;</td>
<td>12 ft roll</td>
<td>01-00240</td>
<td>$70.75</td>
</tr>
</tbody>
</table>

### STANDARD E-GLASS & FIBERGLASS TAPES

Tapes are woven from 8.7 oz./sq. yd. fiberglass cloth, .012" thick, into narrow widths with non-raveling selvage. Perfect for glassing seams, corners, edges fan for repair jobs. Sold in 50 yd. rolls.

<table>
<thead>
<tr>
<th>Width</th>
<th>Fill Length</th>
<th>Part No.</th>
<th>Price/roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>26 W x 17 F</td>
<td>P/N 01-06610</td>
<td>Roll $16.50</td>
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<tr>
<td>1-1/2&quot;</td>
<td>32 W x 17 F</td>
<td>P/N 01-06615</td>
<td>Roll $16.85</td>
</tr>
<tr>
<td>2&quot;</td>
<td>40 W x 17 F</td>
<td>P/N 01-06620</td>
<td>Roll $22.90</td>
</tr>
<tr>
<td>3&quot;</td>
<td>50 W x 17 F</td>
<td>P/N 01-06670</td>
<td>Roll $29.85</td>
</tr>
<tr>
<td>4&quot;</td>
<td>75 W x 17 F</td>
<td>P/N 01-06705</td>
<td>Roll $37.65</td>
</tr>
<tr>
<td>6&quot;</td>
<td>106 W x 17 F</td>
<td>P/N 01-06710</td>
<td>Roll $57.75</td>
</tr>
<tr>
<td>12&quot;</td>
<td>218 W x 17 F</td>
<td>P/N 01-06720</td>
<td>Roll $106.75</td>
</tr>
</tbody>
</table>

### UNIDIRECTIONAL FIBERGLASS TAPE

This is a fibrous glass reinforcement designed to furnish exceptionally high directional strength. Manufactured from parallel strands of glass roving which are held together by a fine woven cross thread. The placement of this cross thread is such that the parallel rovings do not wander or have a tendency to cross over each other. This 100% unidirectional tape can be used instead of unidirectional fabric for spar caps, wings and elevators. Contours well and cuts building time considerably. Wt. 22 oz./sq. yd. .0255" thick. May be used with either polyester or epoxy systems. Used on Polliwagen Long-EZ, Cozy. Adrennace and applicable to all composites.

<table>
<thead>
<tr>
<th>Width</th>
<th>Part No.</th>
<th>Price/roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>P/N 01-06800</td>
<td>$1.95 Yd.</td>
</tr>
</tbody>
</table>

### CARBON FIBER TUBING

Aircraft Spruce offers structural tubing and structural torsion tubing, engineered and built to meet your exact specifications and tolerances. Structural Torsion Tubing, in continuous lengths up to 40', is manufactured with the computer-controlled, fully-automated Helical Winding Process. We offer a broad array of Fiber Options and tubing wall thickness and diameter is determined on a case-by-case basis to suit your application. Special Order Sold in 10 ft. lengths only (can cut for UPS shipment).

* The image shows two types of finish on this product. The standing surface is a smooth, glossy finish. The tube lying on its side is a rough surface, which will be received when product is purchased.

<table>
<thead>
<tr>
<th>D of Tube</th>
<th>Wall Thickness</th>
<th>Length</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5&quot;</td>
<td>0.100</td>
<td>10'</td>
<td>03-00171</td>
<td>$428.95</td>
</tr>
<tr>
<td>0.75&quot;</td>
<td>0.100</td>
<td>10'</td>
<td>03-00172</td>
<td>$428.95</td>
</tr>
<tr>
<td>1.00&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00173</td>
<td>$537.95</td>
</tr>
<tr>
<td>1.25&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00174</td>
<td>$515.00</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00175</td>
<td>$541.95</td>
</tr>
<tr>
<td>1.75&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00176</td>
<td>$565.00</td>
</tr>
<tr>
<td>2.0&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00177</td>
<td>$546.95</td>
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<td>2.25&quot;</td>
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<td>2.5&quot;</td>
<td>0.120</td>
<td>10'</td>
<td>03-00179</td>
<td>$689.99</td>
</tr>
</tbody>
</table>

### GRAPHITE FIBER TAPES

* Tensile Strength – $4,000 PSI/in. width
* Weight – 0.033 Lb./Sq.Ft.
* Thickness – 0.012" Laminate

12" Wide | P/N 01-06300 | $4.35 /Foot
15% Discount on 12"W x 50' Roll & 25% Discount on 12"W x 300' Roll
CARBON GRAPHITE YARN TOW

High strength (470,000 PSI) carbon fibers are used as reinforcement in high performance composites for aircraft applications, recreational and industrial products. Carbon fiber filaments are finer than a human hair. These filaments are bundled together to make a fiber of 3,000, 6,000 or 12,000 filaments called a "tow." The tow is sized with an epoxy compatible material to improve the handling characteristics. It is then wound on a cardboard core holding from 4 to 6 pounds of fiber. 1 lb. spool.

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>3K Tow</td>
<td>01-00343</td>
<td>2470 Yd./lb.</td>
<td>4 lb.</td>
<td>$322.95</td>
</tr>
<tr>
<td>6K Tow</td>
<td>01-00307</td>
<td>1224 Yd./lb.</td>
<td>1 lb.</td>
<td>$199.65</td>
</tr>
<tr>
<td>12K Tow</td>
<td>01-00004</td>
<td>621 Yd./lb.</td>
<td>2 lb.</td>
<td>$149.95</td>
</tr>
<tr>
<td>12K Tow</td>
<td>01-00345</td>
<td>621 Yd./lb.</td>
<td>4 lb.</td>
<td>$298.95</td>
</tr>
</tbody>
</table>

It appears that the 6K tow will prove most practical for homebuilding applications. This size will be available in the small units shown. The 3K and 12K sizes are offered in full spools only. The 3K tow is used primarily by weavers. The 12K is difficult to wet out but can be done by diligent brushing.

S-GLASS ROVING FILAMENTS

This is the S-Glass Strand (roving) used by Rutan Aircraft Factory on the Defiant homebuilt kits. Also applicable to other homebuilt aircraft applications. Defiant requires four 13lb. rolls of S-Glass Strand.

One 15 lb. Roll
P/N 01-06400.............$298.00

JEFFCO EPOXY LAMINATING SYSTEM

1307 Low Viscosity Resin / 3102 Fast Hardener - 100% solids 2-component epoxy laminating system with excellent wet out, low viscosity and high strength. Very low odor and toxicity. Easy to use, 4:1 weight or volumetric mixing, safe, fast curing products for a variety of use applications. Used for fast curing, penetrating wood coatings, adhesives and sealers, fiberglass laminating and microsphere filled fairing compounds. Excellent cold temperature cure down to 40°F. No solvents or VOC's. Non-hazardous, non-corrosive hardener.

Low Viscosity Laminating Resin

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07917</td>
<td>621 Yd./Lb.</td>
<td>2 Lb.</td>
<td>$291.95</td>
</tr>
<tr>
<td>01-07914</td>
<td>621 Yd./Lb.</td>
<td>4 Lb.</td>
<td>$67.75</td>
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Fast Hardener

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07920</td>
<td>621 Yd./Lb.</td>
<td>2 Lb.</td>
<td>$358.95</td>
</tr>
<tr>
<td>01-07918</td>
<td>621 Yd./Lb.</td>
<td>4 Lb.</td>
<td>$79.90</td>
</tr>
<tr>
<td>01-07915</td>
<td>621 Yd./Lb.</td>
<td>8 Lb.</td>
<td>$24.85</td>
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</tbody>
</table>

Medium Hardener

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
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</thead>
<tbody>
<tr>
<td>01-07921</td>
<td>621 Yd./Lb.</td>
<td>2 Lb.</td>
<td>$359.95</td>
</tr>
<tr>
<td>01-07922</td>
<td>621 Yd./Lb.</td>
<td>4 Lb.</td>
<td>$83.75</td>
</tr>
<tr>
<td>01-07923</td>
<td>621 Yd./Lb.</td>
<td>8 Lb.</td>
<td>$24.50</td>
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</table>

KITS - Jeffco Epoxy, 1 gal. kit, fast

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07916</td>
<td>621 Yd./Lb.</td>
<td>2 Lb.</td>
<td>$87.90</td>
</tr>
<tr>
<td>01-07919</td>
<td>621 Yd./Lb.</td>
<td>4 Lb.</td>
<td>$432.95</td>
</tr>
<tr>
<td>01-07924</td>
<td>621 Yd./Lb.</td>
<td>8 Lb.</td>
<td>$287.90</td>
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</tbody>
</table>

Jeffco Epoxy, 5 gal. kit, fast

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07925</td>
<td>621 Yd./Lb.</td>
<td>2 Lb.</td>
<td>$391.95</td>
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</tbody>
</table>

Jeffco Epoxy, 5 gal. kit, medium

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07926</td>
<td>621 Yd./Lb.</td>
<td>4 Lb.</td>
<td>$219.95</td>
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</tbody>
</table>

Jeffco Epoxy, 5 gal. kit, low

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-07927</td>
<td>621 Yd./Lb.</td>
<td>8 Lb.</td>
<td>$219.95</td>
</tr>
</tbody>
</table>

Jeffco Epoxy, 5 gal. kit, slow

AEROPOXY LIGHT PATCHING/FILLER COMPOUND

Aeroxy Light, a modification of the ES6279 adhesive system, is a 2-component paste epoxy patching and filler compound for foam, wood, fiberglass and other surfaces. The mixed consistency of this system is very smooth and creamy, so it spreads easily, and can be applied to a feather edge without separation. It is a thixotropic, non-sag material that will remain in place in thick sections, even when applied upside down! The resin and hardener of this system are color coded for easy mixing. The resin is white and the hardener is brown, giving a very visual indication of complete mixing with a uniform tan color free of streaks. AEROPOXY LIGHT has special low density fillers incorporated into it that provide very distinct benefits. It is a very light material (4 pounds per gallon), and therefore contributes minimal added weight to the filled or repaired structure. Also, the cured material is very easy to sand, making the finished patch undetectable when covered or painted. There are no volatile ingredients in AEROPOXY LIGHT, so the cured material will not outgas, which could cause a loss of adhesion of paint or coverings. Sold in kits of part A & B.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-02006</td>
<td>6 lb. Kit</td>
<td>1-1/2 lb. kit</td>
<td>$34.50</td>
</tr>
<tr>
<td>02-30007</td>
<td>1-1/2 lb. Kit</td>
<td>6 lb. Kit</td>
<td>$109.75</td>
</tr>
</tbody>
</table>

EPOXY PREMIUM PIGMENTS

These Premium Pigments are a paste to tint polyester, vinyl ester, epoxy resin, and polyurethane. Add about 6% to 8% of pigment by weight or 1/2 pint of pigment per gal. of resin.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-00404</td>
<td>2 oz. Kit</td>
<td>P/N 01-00404</td>
<td>$29.50</td>
</tr>
<tr>
<td>01-00405</td>
<td>1-1/2 oz. Kit</td>
<td>P/N 01-00405</td>
<td>$44.65</td>
</tr>
</tbody>
</table>

IMPACTION RESISTANT LAMINATING EPOXY

DLRH-3212 is an unfilled, clean epoxy resin system with a long pot life. DLRH-3212 is a tough, strong, impact resistant resin with chemical resistance. It has excellent wetting quality on kevlar, carbon graphite and fiberglass cloth. Used extensively in construction of aircraft, race cars, motorcycles, helmets and sports equipment. Mixing Ratio by Wt: 100:50 Pot Life (200 Gm MASS) 60 Min; Tensile Strength @ 25 C 12,500; Flexural Modulus @ 25 C 40,900; Heat Deflection 325 F; Thermal Shock 72°F–125°F; Shore “D”: 80, Density: Resin: 9.7, Hardener: 7.9, Mixed: 9.1; Shelf Life: Resin/ Hardener 1 Year.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Approx. Yield</th>
<th>Roll Size</th>
<th>Price/Spool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-00430</td>
<td>5 lb. Kit</td>
<td>P/N 01-00430</td>
<td>$54.50</td>
</tr>
<tr>
<td>01-00431</td>
<td>10 lb. Kit</td>
<td>P/N 01-00431</td>
<td>$154.75</td>
</tr>
<tr>
<td>01-00432</td>
<td>20 lb. Kit</td>
<td>P/N 01-00432</td>
<td>$738.00</td>
</tr>
</tbody>
</table>
### EPOXY LAMINATING SYSTEMS

**POLY EPOXY STRUCTURAL EPOXY SYSTEM**
Poly Epoxy is a true high-performance epoxy resin with unmatched tensile, compressive, and flex strengths. It also has unbeatable peel, shear, and fatigue resistance, as well as impact strength and fracture behavior. It’s great for wings, canards, fuselages, tail foathers, and landing gear. Use it in molds or moldless construction. It parts easily and works beautifully in vacuum bagging. (Avoid silicone-treated peel ply.) It has TWO cure phases, while all other resins—epoxy, polyester, or vinylester—have just one. The two phases occur all by themselves during the curing process. The resulting bond is tougher and stronger than any other.

Poly Epoxy Kit, quart P/N 01-07905 $32.75
Poly Epoxy Kit, gallon P/N 01-07906 $108.75

### POLY EPOXY TECHNICAL DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Immersion Weight Gain, % (140 °F, 30 days)</td>
<td>2.8 2.9</td>
</tr>
<tr>
<td>Glass Transition Temp., °C</td>
<td>72 62</td>
</tr>
<tr>
<td>Shore D Hardness</td>
<td>82 70</td>
</tr>
<tr>
<td>Compressive Strength, psi</td>
<td>32,000 33,000</td>
</tr>
<tr>
<td>Flexural Modulus, psi</td>
<td>515,000 500,000</td>
</tr>
<tr>
<td>Flexural Strength, psi</td>
<td>19,000 14,500</td>
</tr>
<tr>
<td>Compressive Strength, psi</td>
<td>9,000 9,000</td>
</tr>
<tr>
<td>Shore D Hardness</td>
<td>70 70</td>
</tr>
<tr>
<td>Glass Transition Temp., °C</td>
<td>72 62</td>
</tr>
<tr>
<td>Heat Distortion Temp., °C</td>
<td>64 50</td>
</tr>
<tr>
<td>Water Immersion Weight Gain, %</td>
<td>(140 °F, 30 days) 2.8 2.9</td>
</tr>
</tbody>
</table>

Rheology: Mixing Ratio:
- 3 parts Resin to 4 parts Converter by Volume
- 100/47

**AVAILABLE EXCLUSIVELY FROM AIRCRAFT SPRUCE**

### ALPHA POXY NON-STRUCTURAL EPOXY SYSTEM
AlphaPoxy is a low-cost flexible epoxy system that is ideal for laying up non-structural parts like wheel pants, or fairings. Because it is flexible, we don’t recommend it for structural applications, such as fabricating load-bearing structural aircraft parts. Use PolyEpoxy for these applications. This is a low-viscosity system specifically formulated for filling with microballoons, cotton floss, or mill-glass fibers to make slurry. It was designed for maximum sandability; when cured, it is soft enough to be easily cut with sandpaper smoothing a breeze. AlphaPoxy is also excellent when used as a final filler resin over structural parts when an epoxy gel coat is called for. You can use it in place of polyester resins for a much more durable part at a very attractive price. AlphaPoxy uses a non-MDA hardener that allows us to ship it as non-hazardous material.

AlphaPoxy Kit, 1-1/4 gallon P/N 01-07911 $85.50
AlphaPoxy Hardener, gallon P/N 01-07909 $57.75
AlphaPoxy Resin, 7/8 gallon P/N 01-07912 $55.90
AlphaPoxy Hardener, 5 gal. pail P/N 01-07910 $267.95
AlphaPoxy Resin, 5 gal. pail P/N 01-07913 $215.95
Rheology: Mixing Ratio:
- 2 parts Resin to 1 part Hardener by Weight

**AVAILABLE EXCLUSIVELY FROM AIRCRAFT SPRUCE**

### E-Z POXY EPOXY LAMINATING SYSTEMS
In early 1996, Composite Design Co. developed E-Z Poxy to provide a replacement epoxy system for Epoline (Safe-T-Poxy) which is no longer produced by Hexcel. The E-Z Poxy series of laminating systems utilizes one resin and your choice of three hardeners for varying pot life and viscosity requirements. The E-Z Poxy systems offer the same handling and physical properties as the discontinued Epoline systems including ease of use, long pot life, rapid cure for demold or process continuation, and superior room temperature curing properties. Excellent for use in sport aviation, marine, and industrial applications.

E-Z 83 hardener is equivalent to Safe-T-Poxy standard hardener, E-Z 84 is equivalent to Safe-T-Poxy II hardener, and E-Z 87 is equivalent to Safe-T-Poxy slow hardener. E-Z Poxy products should not be mixed with materials produced by other epoxy manufacturers.

### E-Z POXY TECHNICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Z Poxy 1-1/2 gal. kit* EZ 83 Hardner</td>
<td>01-07850</td>
<td>$171.95</td>
</tr>
<tr>
<td>E-Z Poxy 5 gal. kit** EZ 83 Hardner</td>
<td>01-07950</td>
<td>$791.00</td>
</tr>
<tr>
<td>E-Z Poxy 1-1/2 qt. kit EZ 83 Hardner</td>
<td>01-08050</td>
<td>$49.50</td>
</tr>
<tr>
<td>E-Z Poxy II 1-1/2 gal. kit* EZ 84 Hardner</td>
<td>01-08850</td>
<td>$171.95</td>
</tr>
<tr>
<td>E-Z Poxy II 5 gal. kit** EZ 84 Hardner</td>
<td>01-08950</td>
<td>$682.00</td>
</tr>
<tr>
<td>E-Z Poxy 1 gal. resin</td>
<td>01-00245</td>
<td>$93.50</td>
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<tr>
<td>E-Z Poxy 5 gal. resin</td>
<td>01-00246</td>
<td>$397.00</td>
</tr>
<tr>
<td>E-Z Poxy 1/2 gal. hardner</td>
<td>01-00247</td>
<td>$78.80</td>
</tr>
<tr>
<td>E-Z Poxy II 1/2 gal. hardner</td>
<td>01-00248</td>
<td>$78.80</td>
</tr>
<tr>
<td>E-Z Poxy 2-1/2 gal. hardner</td>
<td>01-00249</td>
<td>$319.75</td>
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<tr>
<td>E-Z Poxy II 2-1/2 gal. hardner</td>
<td>01-00250</td>
<td>$285.00</td>
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<tr>
<td>E-Z Poxy 5 gal. hardner</td>
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<tr>
<td>E-Z Poxy 5 gal. hardner</td>
<td>01-00252</td>
<td>$485.00</td>
</tr>
<tr>
<td>E-Z Poxy slow 1/2 gal. hardner</td>
<td>01-00253</td>
<td>$78.80</td>
</tr>
</tbody>
</table>

* 8 lbs. resin, 3.5 lbs hardener  ** 40 lbs. resin, 18 lbs. hardener

### E-Z POXY RESIN SYSTEMS FROM COMPOSITE POLYMER DESIGN

**E-Z 10 Epoxy Resin**
E-Z 10 Epoxy Resin (Viscosity* 1500 cps @ 77F with:
- Hardener: EZ 83  EZ 84  EZ 87
- Mixed Properties:
  - Viscosity Hardener cps @ 77F* 410 140 830
  - Tack Free @ 77F 4 hrs. 8 hrs. 8 hrs.
  - Pot Life @ 77F 2 hrs. 2 hrs. 5 hrs.
  - Cure Time @ 77F 24 hrs. 3 days 3 days
  - Mix Ratio by Volume 100/47 100/47 100/47
  - Mix Ratio by Weight 100/44 100/44 100/44
  - Physical Properties Tg (F):
    - E-Z 10 Epoxy Resin
      - Hardener EZ 83
      - Hardener EZ 84
      - Hardener EZ 87
    - Viscosity Hardener cps @ 77F* 410 140 830
    - Tack Free @ 77F 4 hrs. 8 hrs. 8 hrs.
    - Pot Life @ 77F 2 hrs. 2 hrs. 5 hrs.
    - Cure Time @ 77F 24 hrs. 3 days 3 days
    - Mix Ratio by Volume 100/47 100/47 100/47
    - Mix Ratio by Weight 100/44 100/44 100/44
    - Physical Properties Tg (F):
      - E-Z 10 Epoxy Resin
        - Hardener EZ 83
        - Hardener EZ 84
        - Hardener EZ 87

### E-Z POXY PRICE LIST

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Z Poxy 1-1/2 gal. kit* EZ 83 Hardner</td>
<td>01-07850</td>
<td>$171.95</td>
</tr>
<tr>
<td>E-Z Poxy 5 gal. kit** EZ 83 Hardner</td>
<td>01-07950</td>
<td>$791.00</td>
</tr>
<tr>
<td>E-Z Poxy 1-1/2 qt. kit EZ 83 Hardner</td>
<td>01-08050</td>
<td>$49.50</td>
</tr>
<tr>
<td>E-Z Poxy II 1-1/2 gal. kit* EZ 84 Hardner</td>
<td>01-08850</td>
<td>$171.95</td>
</tr>
<tr>
<td>E-Z Poxy II 5 gal. kit** EZ 84 Hardner</td>
<td>01-08950</td>
<td>$682.00</td>
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<tr>
<td>E-Z Poxy 1 gal. resin</td>
<td>01-00245</td>
<td>$93.50</td>
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<td>E-Z Poxy 5 gal. resin</td>
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<td>$397.00</td>
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<tr>
<td>E-Z Poxy 1/2 gal. hardner</td>
<td>01-00247</td>
<td>$78.80</td>
</tr>
<tr>
<td>E-Z Poxy II 1/2 gal. hardner</td>
<td>01-00248</td>
<td>$78.80</td>
</tr>
<tr>
<td>E-Z Poxy 2-1/2 gal. hardner</td>
<td>01-00249</td>
<td>$319.75</td>
</tr>
<tr>
<td>E-Z Poxy II 2-1/2 gal. hardner</td>
<td>01-00250</td>
<td>$285.00</td>
</tr>
<tr>
<td>E-Z Poxy 5 gal. hardner</td>
<td>01-00251</td>
<td>$652.00</td>
</tr>
<tr>
<td>E-Z Poxy 5 gal. hardner</td>
<td>01-00252</td>
<td>$485.00</td>
</tr>
<tr>
<td>E-Z Poxy slow 1/2 gal. hardner</td>
<td>01-00253</td>
<td>$78.80</td>
</tr>
</tbody>
</table>

* 8 lbs. resin, 3.5 lbs hardener  ** 40 lbs. resin, 18 lbs. hardener

E-Z Poxy systems provide excellent room temperature curing systems for hand layup of composite parts and tooling. The systems are designed to provide ample working time with the varied pot life options while providing a rapid finish cure. Post curing these systems will increase their physical properties as designated in the above data, however, post cure is not required.
POLYESTER RESINS

Polyester resins are hygroscopic (they draw moisture from the air). There are two types of resin, and one or both types may be required, depending on the application. Type "A" resin has a small amount of wax in it, which comes to the surface and forms a barrier against the moisture. This permits the resin to cure completely and the surface is hard and easily sanded. Bond Coat "B" resin does not have any wax content. As a result the surface stays a little tacky, as the surface cure is being inhibited by moisture. This tacky surface provides excellent adhesion between coats. Bond Coat resin is therefore recommended for the first coat of resin to fill the weave of the glass cloth, for bonding fiberglass cloth to plywood or other surfaces and for multi-layers of glass cloth.

TYPE "A" RESIN - #1520-S is a general purpose ortho surfacing resin intended for the finishing coat applied over the Bond Coat #1065-S, or for single coat application. A second coat may be applied after full cure and thorough sanding but is not recommended.

Polyester Resin #692 Quart .................. P/N 01-00346 ........ $23.85
1 Gal. #1520-S with 1 Oz. Catalyst .......... P/N 01-00347 ......... $78.65
5 Gal. #1520-S with 4 Oz. Catalyst .......... P/N 00348 ........ $318.95
Additional catalyst may be required. 1 Oz. .................. P/N 01-06900 ......... $3.80

TYPE "B" RESIN - #1253T-20 is a general purpose bond coat ortho resin for use in making multi laminates. It will not cure to a high gloss finish. Use 1520-S for finish coat to obtain smooth, hard gloss finish. Replaces #1063-S.

Polyester Resin #1253T-20 with 3 Oz. Catalyst .......... P/N 01-00349 ......... $50.45
5 Gal. #1253T-20 with 4 Oz. Catalyst .......... P/N 01-00350 ......... $124.95
Additional catalyst may be required.

Same catalyst used for #1520-S and #1253T-20. Note: Use #1520-S finish coating over #1253T-20 but never use #1253T-20 over #1520-S.

Above resins are not for use in making fuel tanks. For fuel tanks (except those for gasohol) use #6605-0 Isophthalic Resin.

Polyester Resin #6605-0 with 4 Oz. Catalyst .......... P/N 01-00351 ......... $56.50
5 Gal. #6605-0 with 4 Oz. Catalyst .......... P/N 01-00352 ......... $191.95
Additional catalyst may be required.

Catalyst is high quality as seen in the formulated above.

- Type "A" - has excellent adhesion to metal, wood, concrete, fiberglass and other "hard-to-adhere" surfaces. Compatible with most fuels. Is a wax-free resin and must be over-coated with Type "A" Surfacing Resin to obtain a surface cure.

SURFACE CURING AGENT is used in polyester resin to improve sanding properties. Added to #1065-S Bond Coat or #6605-S Isophthalic, it will provide a high sanding properties as in Type "A" Surfacing Resin. Use in proportions of 2 oz. per gallon of resin. Surface Curing Agent is used in addition to catalyst.

4 Oz. in Polyethylene Dispenser Bottle ........ P/N 01-07100 .......... $2.05
Pint (16 Oz.) in Polyethylene Dispenser Bottle .......... P/N 01-7200 ........ $4.40
Gallon (128 Oz.) ........ P/N 01-7300 ........ $58.75

MEKP NORAC CATALYST

MEKP Norac Catalyst is the catalyst added to polyester resins to cure resin systems. As the catalyst mixes with the resin, a chemical reaction occurs, creating heat which cures the resin. Use approx. 1/2 oz per quart of resin. We recommend the use of MEKP for complete cure: Quart .......... P/N 01-00347 ........ $12.95
Gallon .......... P/N 01-00348 ........ $78.65

Gloss finish. Replaces #1063-5. MEKP Clear Catalyst 1 oz. .................. P/N 01-01101 $2.85
MEKP NORAC Catalyst Only (4 oz.) P/N 01-07325 $5.50
Vinyl Ester Resin 411-350PA - Quart Kit P/N 01-01109 $42.85
Vinyl Ester 1-Gal. Kit (Resin & Catalyst) P/N 01-07355 $82.25

Catalyst

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Quart</th>
<th>Gallon</th>
<th>5 Gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2%</td>
<td>1/16 oz.</td>
<td>2/3 oz.</td>
<td>1-3/4 oz.</td>
</tr>
<tr>
<td>2/3%</td>
<td>1/4 oz.</td>
<td>1 oz.</td>
<td>5 oz.</td>
</tr>
<tr>
<td>3/4%</td>
<td>1/2 oz.</td>
<td>1 oz.</td>
<td>6-2/3 oz.</td>
</tr>
<tr>
<td>1-1/2%</td>
<td>1 oz.</td>
<td>1 oz.</td>
<td>10 oz.</td>
</tr>
</tbody>
</table>

WARNING: Mekp Catalyst is very dangerous to the eyes. Always wear full protective gear and have running water at hand when working with Mekp.

EPOXY LAMINATING SYSTEMS

MEKP NORAC CATALYST

MEKP Norac Catalyst is the catalyst added to polyester resins to cure resin systems. As the catalyst mixes with the resin, a chemical reaction occurs, creating heat which cures the resin. Use approx. 1/2 oz per quart of resin. We recommend the use of MEKP for complete cure: Quart .......... P/N 01-00347 ........ $12.95
Gallon .......... P/N 01-00348 ........ $78.65

Gloss finish. Replaces #1063-5.
PR2032 is a medium viscosity, unfilled, light amber laminating resin that is designed for structural production applications. 3 hardeners are available for use with PR2032. PH3660, has a 1-hour pot life. When used with either of these hardeners, the system gives excellent wet-out of fiberglass, carbon and aramid fibers. Special additives have been incorporated into this system to promote chemical adhesion to fabrics made with these fibers. The AEROPOXY systems will cure completely at room temperature, or can be given an elevated temperature cure. AEROPOXY contains no MDA (a known liver toxin and carcinogen) and meets or exceeds current OSHA requirements for safe use. Hardener PH3665 has a longer pot life than PH3660, 2 hours, that is useful for vacuum bagging larger parts before the resin has gelled. Hardener PH3630 is intended for PH3630 pot life is 30 min.

**WEST SYSTEM EPOXY**

WEST SYSTEM brand resins and hardeners, form a two-part epoxy system developed by Gougeon Brothers specifically for wood and composite boat construction. Rutan Aircraft Factory now recommends WEST SYSTEM epoxy for certain homebuilt aircraft applications. Particularly, in need of moisture resistant epoxy is desired. 105 Resin is the base material on which all of the WEST SYSTEM epoxy systems are built. The resin is a clear, light amber, low-viscosity liquid. It is designed specifically to wet out wood fiber. With roller applications, it possesses excellent thin film characteristics in flowing out and is self-leveling without fish-eyeing. It relatively high flash point makes it safer to work with than polyesters. It can be cured in a wide temperature range, then sanded and shaped. It cures quite quickly so that the natural wood can be planed down to the finished wood. Fast Hardener, when mixed with the 105 Resin in a ratio of 5 parts Resin to 1 part Hardener, yields a high-strength, rigid solid with excellent cohesive properties and provides an excellent moisture vapor barrier. The 105 Resin/205 Fast Hardener has a pot life of 10-15 minutes at 70°F. It is also recommended in coating applications where natural finishing is desired. Partial cure time at 70°F is 5-7 hours. 206 Slow Hardener is a low-viscosity mixtue of polyamides. The 105 Resin/206 Slow Hardener has a pot life of 30-40 minutes at 70°F. It is normally used when extended time is needed for large coating and bonding applications. It is especially well suited to working in warmer climates. Partial cure time is 9 hours at 70°F.

### WEST EPOXY KITS

<table>
<thead>
<tr>
<th>Kit No.</th>
<th>Kit Size</th>
<th>Part No.</th>
<th>#105 Resin</th>
<th>Hardener</th>
<th>Kit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>1.2 Qt.</td>
<td>01-08100</td>
<td>32 Oz.</td>
<td>19 Oz.</td>
<td>$55.75</td>
</tr>
<tr>
<td>A-2</td>
<td>1.2 Qt.</td>
<td>01-08200</td>
<td>32 Oz.</td>
<td>7 Oz.</td>
<td>$55.75</td>
</tr>
<tr>
<td>B-1</td>
<td>1.2 Gal.</td>
<td>01-08300</td>
<td>126 Oz.</td>
<td>27 Oz.</td>
<td>$137.95</td>
</tr>
<tr>
<td>B-2</td>
<td>1.2 Gal.</td>
<td>01-08400</td>
<td>126 Oz.</td>
<td>27 Oz.</td>
<td>$137.95</td>
</tr>
<tr>
<td>C-1</td>
<td>5.2 Gal.</td>
<td>01-08500</td>
<td>4.35 Gal.</td>
<td>121 Oz.</td>
<td>$568.00</td>
</tr>
<tr>
<td>C-2</td>
<td>5.25 Gal.</td>
<td>01-08600</td>
<td>4.35 Gal.</td>
<td>121 Oz.</td>
<td>$568.00</td>
</tr>
</tbody>
</table>

### WEST COMPONENTS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Wt. (lbs.)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-42135</td>
<td>Aeroxoy QUART KIT</td>
<td>2.91</td>
<td>$47.25</td>
</tr>
<tr>
<td>01-42140</td>
<td>3/4 gallon PR2032 Resin</td>
<td>7.5</td>
<td>$89.75</td>
</tr>
<tr>
<td>01-42145</td>
<td>1 quart PH3660 Hardener</td>
<td>2.0</td>
<td>$36.85</td>
</tr>
<tr>
<td>01-42150</td>
<td>Aeroxoy Gallon KIT</td>
<td>9.5</td>
<td>$175.95</td>
</tr>
<tr>
<td>01-42155</td>
<td>5 gallon PR2032 Resin</td>
<td>40</td>
<td>$474.95</td>
</tr>
<tr>
<td>01-42160</td>
<td>2 gallon PH3660 Hardener</td>
<td>13</td>
<td>$179.95</td>
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<tr>
<td>01-42165</td>
<td>1 quart PH3630 Hardener</td>
<td>2</td>
<td>$62.00</td>
</tr>
<tr>
<td>01-00160</td>
<td>1 pint PH3630 Hardener (fast)</td>
<td>7 oz.</td>
<td>$13.95</td>
</tr>
<tr>
<td>01-00161</td>
<td>1 quart PH3630 Hardener (fast)</td>
<td>27 oz.</td>
<td>$38.50</td>
</tr>
<tr>
<td>01-00162</td>
<td>1 pint PH3665 Hardener (slow)</td>
<td>7 oz.</td>
<td>$13.95</td>
</tr>
<tr>
<td>01-00163</td>
<td>1 quart PH3665 Hardener (slow)</td>
<td>121 oz.</td>
<td>$33.75</td>
</tr>
</tbody>
</table>

**ORDER 301/303 PUMP PACKS SEPERATELY.**

### 207 SPECIAL COATING HARDENER

This hardener is used where a very clear, moisture resistant natural wood finish is needed. Can be used to laminate veneers where joints will be subjected to sunlight. Improves sun resistance, cure solid in 9-12 hours, and maximum strength in 7 days.

### 209 TROPICAL HARDENER

This hardener is used for bonding applications in warm or humid weather or when extended working time is needed. Provides twice the working time as 206 Hardener. Forms a clear, amber solid when cured. Pot life is 40 minutes, solid state in 24 hours, and maximum strength in 5-9 days.

### PRO-SET 125 RESIN & 229 HARDENER

Mixing: 125 Resin: 229 Hardener - By weight, 100:30 & By volume, 100:35. Pot life: 65°~83 min. 72°~77 min. 85°~27 min.

For PROFESSIONAL use only.

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Test Method</th>
<th>Room Temp (2 wks.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression Yield (psi)</td>
<td>ASTM D-695</td>
<td>14,500</td>
</tr>
<tr>
<td>Tensile Strength (psi)</td>
<td>ASTM D-638</td>
<td>7,550</td>
</tr>
<tr>
<td>Annular Shear Fatigue (psi)</td>
<td>100,000 cycles</td>
<td>568.00</td>
</tr>
<tr>
<td>GAL #125 Resin</td>
<td>P/N 01-01221</td>
<td>$11.75</td>
</tr>
<tr>
<td>GAL #229 Hardener</td>
<td>P/N 01-01222</td>
<td>$11.75</td>
</tr>
</tbody>
</table>

### PRO-SET 135 RESIN & 226/237 HARDENERS

135 Resin: LAM-135 Medium Viscosity Laminating Resin. 226 Hardener: LAM-226 Medium Laminating Hardener. Medium viscosity for good wet out of all synthetic composite fabrics and core materials. Medium cure speed hardener provides 2 to 3 hours of working time at 77°F (25°C). A typical laminate will be gelled in 4 to 5 hours. 237 Hardener: LAM-237 Extra Slow Laminating Hardener. High viscosity for good wet out of all synthetic composite fabrics and core materials. Extra slow cure speed hardener provides 7 to 8 hours of working time at 77°F (25°C). A typical laminate will be gelled in 12 to 14 hours.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Wt. (lbs.)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01223</td>
<td>1/2 gallon 135 Resin</td>
<td>96.75</td>
<td>$96.75</td>
</tr>
<tr>
<td>01-01224</td>
<td>1 quart 135 Resin</td>
<td>66.75</td>
<td>$66.75</td>
</tr>
<tr>
<td>01-01237</td>
<td>1 gallon 237 Hardener</td>
<td>130.75</td>
<td>$130.75</td>
</tr>
</tbody>
</table>

### WEST SYSTEM ACCESSORY PRODUCTS

- West System User Manual — P/N 01-08750 — FREE
- West System 101 Handy Repair Pack - Contains 105 resin & 205 hardener plus accessories needed for small repairs — P/N 01-08760 — $10.50
- West System #101-6 Maxi Repair Kit - incl. materials to make 6 individual repairs using 105 resin and 205 hardener — P/N 01-08770 — $34.01
- West System 501 White Pigment - use this epoxy based pigment to provide a neutral white base for the final coloring system. Mix at ratio of 100:50 by weight. — P/N 01-08775 — $16.49
- West System 410 Microlight an excellent filler which provides easy workability for a variety of applications. Easy to sand and cures to a neutral tan color. — P/N 01-08780 — $15.69

### 423 GRAPHITE POWDER

423 Graphite Powder can be mixed with WEST SYSTEM epoxy to produce a low friction coating with increased scuff resistance and durability. 423 is often used as a bearing surface, and as a coating on the bottoms of racing craft that are dry sailed.

For Mini Pump use only. 423 Graphite Powder — P/N 09-00315 — $17.93

### 301/303 PUMP PACK

Using Mini Pumps helps ensure accurate metering of resin/hardener mixture. Pumps mount directly on resin and hardener containers. One stroke from each pump delivers proper ratio of resin to hardener. Kit consists of 3 pumps for A, B, and C epoxy kits. — P/N 01-00318 — $14.52
ECOPOXY UVPOXY

Our UVPOxy Kit is high performance two part system that is commonly used for table tops, bars, wood finishes, see-through clear coating, art work, layup, and other applications requiring a clear, strong coating. It cures to a crystal clear, high build, long lasting, glass-like finish, and will not blush or sweat under high humidity conditions. UVPOxy is designed to resist yellowing caused by the sun and other ultra violet light sources.

Specifications:
- Color: Clear (Visual)
- Mix Ratio: 2:1
- Pot Life: 15-20 Minutes

Features:
- Crystal Clear - Cures to a clear, glass-like finish
- Low Odour - It’s safe to use indoors, no ventilation or respiration required
- UV Stable - Won’t fade or yellow, your finishes will last forever!
- User Friendly - Mixes at a 1:1 mix ratio, very easy to calculate amounts needed
- Low Drip - Thicker viscosity ensures it does not drip onto other areas
- Self-Leveling - Self-levels perfectly, making for a nice even finish every time!

<table>
<thead>
<tr>
<th>Description (Metric / Approx US)</th>
<th>Size</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoPoxy UVPoxy Kit</td>
<td>500 mL / 1 Pt</td>
<td>09-04095</td>
<td>$31.65</td>
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<tr>
<td>EcoPoxy UVPoxy Kit</td>
<td>1 L / 1 Qt</td>
<td>09-04096</td>
<td>$48.50</td>
</tr>
<tr>
<td>EcoPoxy UVPoxy Kit</td>
<td>2 L / 2 Qt</td>
<td>09-04097</td>
<td>$77.75</td>
</tr>
<tr>
<td>EcoPoxy UVPoxy Kit</td>
<td>4 L / 1 Gal</td>
<td>09-04098</td>
<td>$127.75</td>
</tr>
</tbody>
</table>

ECOPOXY CLEAR

Our Clear Kits are ideal for sealing / clear-coating surfaces such as concrete and wood, as well as for wetting fabrics that require a clear, waterproof finish. Odourless and non-toxic, it can be applied indoors or outdoors without masks or ventilation. This self-leveling kit is applied at approximately 10 mls finish thickness. It provides a durable, light reflective floor with excellent adhesion qualities. It’s easily roller applied.

The Clear Kit is non-shrinking, and resistant to to water, acids, other solvents. It will never peel, flake or chalk when properly applied. Typical use include Warehouse Floors, Aisle ways, Storage Areas, Industrial & Commercial Floors.

Specifications:
- Color: Yellow (Visual)
- Mix Ratio: 2:1
- Pot Life: 15-20 Minutes

<table>
<thead>
<tr>
<th>Description</th>
<th>Size (Metric / Approx US)</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoPoxy Clear Kit</td>
<td>750 mL / 1.6 Pt</td>
<td>09-04099</td>
<td>$34.65</td>
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<tr>
<td>EcoPoxy Clear Kit</td>
<td>1.5 L / 1.6 Qt</td>
<td>09-04101</td>
<td>$51.95</td>
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<tr>
<td>EcoPoxy Clear Kit</td>
<td>3 L / 3.2 Qt</td>
<td>09-04102</td>
<td>$103.85</td>
</tr>
<tr>
<td>EcoPoxy Clear Kit</td>
<td>6 L / 1.6 Gal</td>
<td>09-04103</td>
<td>$184.75</td>
</tr>
</tbody>
</table>

POLYESTER GEL COATS

These polyester gel coats can be used as the surface of new fiberglass parts laid up in molds or used in the repair of gel coat surfaces on fiberglass parts. On surface repairs, the gel coat must be sealed to fully cure. PVA can be used to seal the gel coat.

<table>
<thead>
<tr>
<th>Color</th>
<th>Size</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Pint</td>
<td>09-01668</td>
<td>$21.65</td>
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<tr>
<td></td>
<td>Quart</td>
<td>09-01666</td>
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</tr>
<tr>
<td></td>
<td>Gallon</td>
<td>09-01667</td>
<td>$62.75</td>
</tr>
<tr>
<td>White</td>
<td>Pint</td>
<td>09-01669</td>
<td>$19.95</td>
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<td></td>
<td>Quart</td>
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<td>$34.50</td>
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<td></td>
<td>Gallon</td>
<td>09-01665</td>
<td>$66.50</td>
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<td>Dark Blue</td>
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<td>09-01670</td>
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<td>Quart</td>
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<tr>
<td></td>
<td>Gallon</td>
<td>09-01672</td>
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<td>Red</td>
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<td>09-01673</td>
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<td></td>
<td>Quart</td>
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<td></td>
<td>Gallon</td>
<td>09-01675</td>
<td>$98.75</td>
</tr>
<tr>
<td>Clear</td>
<td>Pint</td>
<td>09-02159</td>
<td>$26.50</td>
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<tr>
<td></td>
<td>Quart</td>
<td>09-02160</td>
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<tr>
<td></td>
<td>Gallon</td>
<td>09-02161</td>
<td>$108.75</td>
</tr>
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</table>

ECOPOXY SLOW

Our Slow Kit is typically used to fabricate larger, more complicated composite parts. It has a longer 2.5 - 3.5 hour working time, and can be used for vacuum bagging larger parts before the resin has gelled. It can also be used for and for repairs or additions to a primary structure. It is compatible with most fabrication techniques, such as lay-up and filament winding. It features excellent wet-out and chemical adhesion of fiberglass, carbon and aramid fibers. Typical applications include aircraft, boats, auto body, structural components and parts. Odorless and non-toxic, it can be applied indoors or outdoors without masks or ventilation.

The Slow Kit will cure completely at room temperature (25°C or above) and does not require a heat cure. When constructing 2-3 ply thin laminates for overnight demolding and sandability, a room temperature of 22°C or above is required. In thicker laminates and larger masses, plan to allow the laminate to cure at least 12 hours at a minimum of 24°C before moving the structure.

Specifications:
- Color: Yellow (Visual)
- Mix Ratio: 2:1
- Pot Life: 2.5-3.5 hours

<table>
<thead>
<tr>
<th>Description (Metric / Approx US)</th>
<th>Size</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoPoxy Slow Kit</td>
<td>750 mL / 1.6 Pt</td>
<td>09-04104</td>
<td>$32.50</td>
</tr>
<tr>
<td>EcoPoxy Slow Kit</td>
<td>1.5 L / 1.6 Qt</td>
<td>09-04105</td>
<td>$51.95</td>
</tr>
<tr>
<td>EcoPoxy Slow Kit</td>
<td>3 L / 3.2 Qt</td>
<td>09-04106</td>
<td>$103.85</td>
</tr>
<tr>
<td>EcoPoxy Slow Kit</td>
<td>6 L / 1.6 Gal</td>
<td>09-04107</td>
<td>$184.75</td>
</tr>
</tbody>
</table>

ECOPOXY MEDIUM

Our Medium Kit is typically used to fabricate high performance composite parts. It has a 20 minute working time and can be used for all sizes of parts, and for repairs or additions to a primary structure. The vacuum bagging technique can be used for smaller parts. It is compatible with most fabrication techniques, such as lay-up and filament winding. It features excellent wet-out and chemical adhesion of fiberglass, carbon and aramid fibers. Typical applications include aircraft, boats, skateboards, skis, auto body, structural components and parts. Odorless and non-toxic, it can be applied indoors or outdoors without masks or ventilation.

The Medium Kit will cure completely at room temperature (25°C or above) and does not require a heat cure. When constructing 2-3 ply thin laminates for overnight demolding and sandability, a room temperature of 25°C or above is required. In thicker laminates and larger masses, plan to allow the laminate to cure at least 12 hours at a minimum of 24°C before moving the structure.

Specifications:
- Color: Yellow (Visual)
- Mix Ratio: 4:1
- Pot Life: 15-20 Minutes

<table>
<thead>
<tr>
<th>Description (Metric / Approx US)</th>
<th>Size</th>
<th>Part No.</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>EcoPoxy Medium Kit</td>
<td>1.25 L / 1.33 Qt</td>
<td>09-04108</td>
<td>$43.95</td>
</tr>
<tr>
<td>EcoPoxy Medium Kit</td>
<td>2.5 L / 2.65 Qt</td>
<td>09-04109</td>
<td>$71.75</td>
</tr>
<tr>
<td>EcoPoxy Medium Kit</td>
<td>5 L / 1.32 Gal</td>
<td>09-04111</td>
<td>$122.75</td>
</tr>
</tbody>
</table>

ECOPOXY FAST

Our Fast Kit is most commonly used as an adhesive or in an injection box for pultrusion. It has a pot time of just 2-3 minutes, and features a high-strength, waterproof bond to a variety of materials including wood, fiberglass, metal, glass, tile, and more.

Specifications:
- Color: Yellow (Visual)
- Mix Ratio: 2:1
- Pot Life: 2.5-3 Minutes

<table>
<thead>
<tr>
<th>Description (Metric / Approx US)</th>
<th>Size</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoPoxy Fast Kit</td>
<td>750 mL / 1.6 Pt</td>
<td>09-04113</td>
<td>$34.65</td>
</tr>
<tr>
<td>EcoPoxy Fast Kit</td>
<td>1.5 L / 1.6 Qt</td>
<td>09-04114</td>
<td>$51.95</td>
</tr>
<tr>
<td>EcoPoxy Fast Kit</td>
<td>3 L / 3.2 Qt</td>
<td>09-04115</td>
<td>$103.85</td>
</tr>
<tr>
<td>EcoPoxy Fast Kit</td>
<td>6 L / 1.6 Gal</td>
<td>09-04116</td>
<td>$184.75</td>
</tr>
</tbody>
</table>
FOAM

STYROFOAM – SMALL CELL
STYROFOAM FB – Low density (2 lb./ft³). Tight closed cell structure leaves no voids between the cells. The result is high compressive strength and unequalled resistance to water penetration. Has excellent resistance to bases, salts, alcohols and most acids but not to petroleum based solvents. Not for structural use.

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>Sheet Size</th>
<th>Part No.</th>
<th>Price/Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrofoam (Blue) Small Cell</td>
<td>2 Lb/ft³</td>
<td>5/8&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-09400</td>
</tr>
<tr>
<td></td>
<td>3/4&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-09500</td>
<td>$17.65</td>
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<tr>
<td></td>
<td>1&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-09700</td>
<td>$21.70</td>
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<td></td>
<td>5/8&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-10000</td>
<td>$29.50</td>
</tr>
<tr>
<td></td>
<td>1-1/2&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-10900</td>
<td>$43.85</td>
</tr>
<tr>
<td></td>
<td>2&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-10100</td>
<td>$57.65</td>
</tr>
<tr>
<td></td>
<td>4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-10200</td>
<td>$57.50</td>
</tr>
</tbody>
</table>

POLYSTYRENE – LARGE CELL
This blue large cell expanded foam is 2 lb. per cubic feet density and cuts easily using a hot wire to airfoil shapes. Compatible with most adhesives, but should be used only with epoxies, not polyester resins. Will dissolve in fuels and solvents. Cuts smoothly with hot wire and airfoil shapes. Used in the construction of VariEze, Long-EZ, Cozy, and other composite aircraft.

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>Sheet Size</th>
<th>Part No.</th>
<th>Price/Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrofoam FB (Blue) Large Cell</td>
<td>2 Lb/ft³</td>
<td>8&quot;</td>
<td>16 x 4&quot;</td>
<td>01-37600</td>
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<tr>
<td></td>
<td>8&quot;</td>
<td>16 x 25&quot;</td>
<td>01-01166</td>
<td>$33.95</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>16 x 42&quot;</td>
<td>01-10600</td>
<td>$87.90</td>
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<tr>
<td></td>
<td>8&quot;</td>
<td>16 x 67&quot;</td>
<td>01-10800</td>
<td>$136.70</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>16 x 109&quot;</td>
<td>01-10900</td>
<td>$218.50</td>
</tr>
</tbody>
</table>

URETHANE FOAM
This foam is easily contoured using a large knife, and then sands well to final form. Excellent for producing the fuselage, wing tips, and other curved parts. It is fuel resistant and can be used for fuel cells. Compatible with most adhesives. Do not hot wire polyurethane foam. Available in tan or green.

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>Sheet Size</th>
<th>Part No.</th>
<th>Price/Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urethane (Tan or Green)</td>
<td>2 Lb/ft³</td>
<td>1/2&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-11300</td>
</tr>
<tr>
<td></td>
<td>1/2&quot;</td>
<td>48&quot; x 48&quot;</td>
<td>01-11400</td>
<td>$19.85</td>
</tr>
<tr>
<td></td>
<td>3/4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-12150</td>
<td>$13.95</td>
</tr>
<tr>
<td></td>
<td>3/4&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-12160</td>
<td>$29.85</td>
</tr>
<tr>
<td></td>
<td>1&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-11500</td>
<td>$18.75</td>
</tr>
<tr>
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<td></td>
<td>2&quot;</td>
<td>48&quot; x 96&quot;</td>
<td>01-12100</td>
<td>$124.75</td>
</tr>
</tbody>
</table>

DIVINYCELL FOAM
DIVINYCELL – A closed cell medium to high density foam which has high compression strength, durability, and excellent fire resistance. Can be vacuum formed to compound shapes and can be bent using heat. Compatible with polyester, vinylester, and epoxy resins.

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>Sheet Size</th>
<th>Part No.</th>
<th>Price/Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divinycell PVC (Tan) Type H45</td>
<td>3 Lb/ft³</td>
<td>1/8&quot;</td>
<td>32&quot; x 48&quot;</td>
<td>01-00158</td>
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<tr>
<td></td>
<td>1/4&quot;</td>
<td>32&quot; x 48&quot;</td>
<td>01-12300</td>
<td>$21.75</td>
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<tr>
<td></td>
<td>3/8&quot;</td>
<td>32&quot; x 48&quot;</td>
<td>01-12400</td>
<td>$35.50</td>
</tr>
<tr>
<td></td>
<td>5/8&quot;</td>
<td>24&quot; x 47&quot;</td>
<td>01-12500</td>
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<td>32&quot; x 48&quot;</td>
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<td>48&quot; x 96&quot;</td>
<td>01-12920</td>
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<td>3&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-12930</td>
<td>$338.75</td>
</tr>
<tr>
<td>Divinycell PVC (Tan) Type H100</td>
<td>6 Lb/ft³</td>
<td>1/4&quot;</td>
<td>37&quot; x 37.5&quot;</td>
<td>01-13000</td>
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<td>1&quot;</td>
<td>6&quot; x 10&quot;</td>
<td>01-13100</td>
<td>$8.75</td>
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<tr>
<td></td>
<td>1&quot;</td>
<td>10&quot; x 12&quot;</td>
<td>01-13200</td>
<td>$18.95</td>
</tr>
</tbody>
</table>

LAST-A-FOAM
LAST-A-FOAM – Rigid, Polyether Polyurethane foam with fine closed-cell structure, light cream-yellow color. LAST-A-FOAM® is wonderfully versatile for sandwich-core applications. It cuts and shapes easily with common woodworking tools, and bonds to itself and other materials with most epoxy, polyester, or urethane-type adhesives. LAST-A-FOAM® is unaffected by water, fuels and most solvents, and paint finishes are easily applied. It is frequently used in regular molds after the gel-coat and first two layers of glass are installed; the LAST-A-FOAM® is added and another layer of glass applied for a strong, light-weight sandwich.

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>Sheet Size</th>
<th>Part No.</th>
<th>Price/Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last-A-Foam Urethane/Polyester (Yellow) 275°F</td>
<td>4.5 Lb/Cu. Ft.</td>
<td>10mm</td>
<td>24&quot; x 96&quot;</td>
<td>01-13400</td>
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<td></td>
<td>1/4&quot;</td>
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<td></td>
<td>1/4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-01196</td>
<td>$20.00</td>
</tr>
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<td>24&quot; x 96&quot;</td>
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<td></td>
<td>2/8&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-13700</td>
<td>$57.75</td>
</tr>
<tr>
<td></td>
<td>3/8&quot;</td>
<td>24&quot; x 96&quot;</td>
<td>01-14000</td>
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<td>3/4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-01195</td>
<td>$41.83</td>
</tr>
<tr>
<td>Last-A-Foam Urethane/Polyester (Yellow) 275°F</td>
<td>6 Lb/Cu. Ft.</td>
<td>1/4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-14100</td>
</tr>
<tr>
<td></td>
<td>3/8&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-14200</td>
<td>$28.50</td>
</tr>
<tr>
<td>Last-A-Foam Urethane/Polyester (Yellow) 275°F</td>
<td>8 Lb/Cu. Ft.</td>
<td>1&quot;</td>
<td>16&quot; x 24&quot;</td>
<td>01-01048</td>
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<tr>
<td></td>
<td>3/4&quot;</td>
<td>24&quot; x 48&quot;</td>
<td>01-14250</td>
<td>$49.70</td>
</tr>
<tr>
<td>Last-A-Foam Urethane/Polyester (Yellow) 275°F</td>
<td>18 Lb/Cu. Ft.</td>
<td>0.200&quot;</td>
<td>12&quot; x 48&quot;</td>
<td>01-14400</td>
</tr>
<tr>
<td></td>
<td>1/4&quot;</td>
<td>12&quot; x 48&quot;</td>
<td>01-14500</td>
<td>$37.55</td>
</tr>
</tbody>
</table>
LIQUID "X-30" FOAM (TWO-COMPONENT POLYURETHANE FOAM)

This system consists of two components - "X-30" Resin and "X-30" Catalyst. When the resin and catalyst are mixed in equal volumes they expand into a rigid closed-cell foam of 2 pound density. Thorough mixing of the two components is essential. "X-30" Foam expands approximately 40 times its liquid volume. Small-batch mixes are recommended. Cured foams can be easily trimmed, cut and shaped with common woodworking tools. Use toluene or MEX for cleanup. "X-30" Foam contains a highly reactive agent and is classified as a toxic material. It is combustible, a strong skin sensitizer and eye irritant. Avoid contact with the skin. Use rubber gloves when handling. Used for: flotation, thermal and acoustic insulation reinforcement and miscellaneous void filling. Most small pleasure boats made "sink-proof" with approximately two gallons of "X-30". Data sheet available. "X-30" Foam contains a volatile fluorocarbon and should be stored at 70°F or lower. "X-30" is used on the Osprey II bottom hull, canopy, nose cone, etc., requiring about four gallons of material (2 gal each). Shelf life at least 6 months. Users have reported "more than 2 years shelf life".

X-30 is the original polyurethane foam. Do not accept substitutes!

POLYFIX COMPOSITE REPAIR KITS

Polyfix is a 3-part system that uses chemical reaction to heat the repair to 140°F, fusing it to the parent part. This system repairs ABS, PVC, CVCP, SMC, acrylic, vinyl, graphite, Kevlar, plexiglass, nylon, fiberglass, and many other materials. The system combines cyanoacrylate glue, a catalyst, filler, and an accelerator. May be used on speed fairsings, wing tips, cowlings, glareshields, and more. Kits include polyfix chemicals, Polydust, gloves, mixing tools, and an easy to follow instruction manual.

Composites are now being used extensively in marine applications. Small chrome boats, outboard motors, small sailboats, and many other marine applications use Polyfix to repair and fabricate parts. Polyfix is being used on aircraft such as Piper, Mooney, Cessna, F406, Eurocopter, Bell, Sikorsky, MD-500, etc. Polyfix is used in the homebuilt and general aviation market.

For Complete list of all kit components please visit our website at: www.aircraftspruce.com

COMPOSITE MATERIALS PRACTICE KIT

All designers highly recommend that builders who are considering a composite project purchase this practice kit. It contains the excellent 26 page 11" x 17" manual by Kurt Rutan entitled MOLDLESS COMPOSITES SANDWICH HOMEBUILT/ AIRCRAFT CONSTRUCTION ($14.50) plus the assorted foams, epoxy, fiberglass, filler materials and supplies with which to work. Everything needed to practice the technique of composite building before venturing into a complete aircraft project.

Practice Kit with Manual
P/N 01-15000.................. $99.95
Practice Kit without Manual
P/N 01-15100..................$89.75
International Practice Kit with Manual
P/N 01-15050..................$59.30

BACKSAVER FOAM

Backsaver foam is temperature sensitive, softening when it comes in contact with a warm surface. Thus, in a seat cushion, the foam softens and conforms to the person's body thereby providing point-free comfort that is really incredible. The best universal cushion for pilots and passengers alike. The conforming foam cushion was developed for the "Astronaut's Couch" back in the Apollo space program. Confor Foam has the capability of absorbing a tremendous amount of impact shock compared to common polyfoam and it is flame resistant. It is an excellent product that will give your seats enduring comfort that you never thought possible. Adapts to you for pressure point-free comfort that is really incredible. The best universal cushion for aircraft use is a 3" CF42/CF45/CF47 laminate. Confor Foam meets FAR 25.853, FAR 25.855, and CAL 117 burn specifications making it excellent for certified aircraft or homebuilts. Some special sizes in 1", 2", or 3" thicknesses are available on special request.

One inflatable lumber support
P/N 01-09310.......................... $25.50 ea.
Two inflatable lumber supports
P/N 01-09320..........................$48.50 ea.
Three inflatable lumber supports
P/N 01-09330..........................$54.00 ea.

INFLATABLE LUMBAR SUPPORT

The inflatable air pillow can be installed just under the seat material and will give you the customized support where you need it. It has a conveniet palm-size pump and a release valve control the firmness of the lumbar support. The In-Flight Back Support is made of a heavy-duty self-extinguishing neoprene rubber, specially designed to pass FAR 23.853 flame-test requirements.

WEST SYSTEMS FIBERGLASS REPAIR KITS

Here is everything you need to complete small repairs around the boat, shop or home.

Part # 01-08760 Contains: • #101 Handy Repair Pack

Part # 01-08770 Contains: • Six 16g packets of #105 Resin • Two 32g. packets of #205 Hardener • 3.5g. High Density Filler • 1 application brush • Ground Shipping Only • #101-6 Maxi Repair Pack - This kit is large enough to tackle a multitude of repair jobs.

Polyfix PLYDT Catalytic 1 PT
P/N 01-01033.................. $39.95

For Complete list of all kit components please visit our website at: www.aircraftspruce.com
VACUUM BAGGING TECHNIQUES BOOK - P/N 01-14803
VACUUM BAGGING FILM - #7400 film is a high grade nylon 6 film. It is transparent green in color and heat stabilized for long term cures. Film is soft & pliable and ideal for high temperature composites, metalbond, and any function requiring heat & pressure. Width: 54".

P/N 01-14805 ........................................ $1.55/Yd.

4.5 OZ. BREATH/ BLEEDER PLY - #3450 is a 4.5 oz. non-woven polyester breather system used for even volatile evacuation from vacuum bags. It can be used at pressures up to 85 psi (5.8 bars). Multi-directional conformability makes it a very efficient breather. This breather does not contain any binders which could seal the air flow. Width: 60".

P/N 01-14810 ........................................ $1.85/Lin.Yd.

STRETCHLON VACUUM BAG FILM 60" - Modified urethane film with incredibly high elongation, Can be reused. .0015 x 60" x 200 ft (38µ x 1.83m x 62m) Maximum temperature use 250°F (122°C). 120" wide (3.04m). Perfect for compaction. Not affected by humidity, always stays soft with no cracking. Can be heat sealed to custom shapes.

P/N 01-01080 ........................................ $4.80/Lin.Yd.

10 OZ. BREATHER/ BLEEDER PLY - #3100 is a 10 oz/sq; yd. nonwoven polyester breather system used for even volatile evacuation from vacuum bags. It can be used at pressures up to 200 psi (13.8 bars). Multi-directional conformability makes it a very efficient breather. This breather does not contain any binders which could cause seal-off of air flow. Width: 60".

P/N 01-14815 ........................................ $4.50/Lin.Yd.

2 OZ NYLON RELEASE PLY - #7520 is a smooth release fabric that has been scoured and heat set so that it is contaminant free and will not shrink during the laminate cure cycle. It is then coated with a special release peel. This peely may be used for composite manufacturing and metal bonding, but is not recommended for use with resin systems containing phenolic. Thickness: .005". Color: Blue. Width: 60".

P/N 10-14825 ........................................ $9.75/Lin.Yd.

RELEASE FILM - #2410 material is the most economical release film available that can be used at temperatures over 350° F. The film has handling qualities similar to the lowest priced halohydrocarbon film. Thickness: .002" Color: Clear. Width: 54".

P/N 01-14830 ........................................ $3.10/Lin.Yd.

POROUS TEFLOM COATED RELEASE FILM - #7025 is used where a medium weight porous release fabric is required on the surface of a part. During the cure of the assembly it will allow excess resin and all of the air and volatiles to pass into the bleed/breather ply (CFM Airflow 70). At completion of the cure the fabric will release cleanly from the assembly. Color: Brown. Width: 37.5". 10 yard min. order.

P/N 01-14835 .................. $5.50/Lin.Yd.

2410 RELEASE FILM - Release film - 2410 material is the most economical release film available that can be used at temperatures over 350° F. The film has handling qualities similar to the lowest priced halohydrocarbon film. 54" wide, .002" thick.

Clear ........................................ $0.48/Lin.Yd.

P/N 01-01427 ........................................ $3.10

NON-POROUS TEFLOM COATED RELEASE FABRIC - #7039 is a light weight extra smooth TFE coated glass fabric. Will leave little or no fabric imprint on most composite lay-ups. It is used as a release fabric where there is no requirement for bleeding or breathing resin or volatiles from the composite lay-up. It is mainly used for protecting caul sheets from resin contamination and as a release media on tool surfaces. Thickness: .0015. Color: Brown. Width: 30". P/N 01-014845

$16.90/roll

FLASH TAPE - #6045-02 is a polyester backing film with a fully cured silicone adhesive. This tape is very tough and ideal for resin or adhesive flash removal. Color: Blue. Thickness: .0015. Roll size: 1½" x 72 yds.

P/N 01-01194 ........................................ $4.99

400° F RESISTANT SEALANT TAPE - #4401 is a grey vacuum bag sealant tape that removes cleanly from the tool surface at the completion of the cure cycle. It can be used at any temperature up to 400°F. It can be used to seal any tool surface now in use where there has been a starched, perhaps year old, industry for many years. It has high initial tack and is very easy to apply to prevent leaks between the bag and tool. It works well for composites, metalbond, or any function that requires temperature and/or pressure up to 400°F. Color: Gray Size: 1/8" x 1/2" x 25 ft.

P/N 01-14850 ........................................ $6.45/roll

VACUUM VALVE - TWO PIECE - #8112 is a two-piece vacuum valve which requires one quarter turn to lock in place. Service temperature to 500° F. This valve is an industry standard. The base is anodized and red in color. Inside Diameter: 1/4" standard. Threads: #4-40. NPT.)

P/N 01-14855 ........................................ $28.50/ea.

OVEN VACUUM HOSE - #8020 is a thick walled, flexible silicone hose. It is normally used for debulking and oven cures using vacuum only. Furnished in standard 10 foot lengths. Other lengths available on special order. Hose size: 1/4" ID. P/N 01-14860 ........................................ $104.75/ea.

HIGH TEMPERATURE QUICK DISCONNECT SET - #8432 is a two-piece quick disconnect both male and female for use to 500° F at pressures up to 200 psi (13.8 bars). Sold as a set of male & female components.

P/N 01-14866 ........................................ $42.85/set

SHRINK TAPE - #9010 is an oriented polyester film designed to shrink as the laminate approaches cure temperature. The applied pressure is maintained during cure. It is used extensively where the shape of the assembly makes conventional bagging too labor-intensive. If excess resin needs to be released during cure, perforating the shrink tape after the assembly has been wrapped with a porcupine roller will reduce the resin content as well as permit air and volatiles to escape. Thickness: .002". Width: 1-1/4", Roll length: 100 yds.

P/N 01-14870 ........................................ $15.85/roll

GREENFLOW 75 - Greenflow 75 is designed to efficiently distribute resin with little waste due to the low profile, tight construction. Greenflow 75 can be used with polyester vinylster and epoxy resins. Color: Green. Thickness: 0.35". 0.003 (89mm x 75 µm). Melt Point (Method:DSC): 230°F (161°C). Configuration of Net: Rhombic

P/N 01-01081 ........................................ $3.35/Lin.Yd.

SEALANT TAPE ROLLER - #9050 is a plastic roller designed to assist in applying sealant tape between the bag and the tool. It assists the operator in applying maximum pressure to make a leak-proof, smooth seal. The unit is lightweight and easy to use, and the plastic roller helps prevent damage to the film. Roller Diameter: 1-3/16". 1/8" Wand: 1-3/8".

P/N 01-14875 ........................................ $42.50/ea.

PORCUPINE ROLLER - #9060 is a dual roller with a wood handle designed to perforate films to allow air, volatiles, and some resin to flow through the film. The amount of resin flow can be controlled by the depth of the pin penetration. Also useful on foam to give the bonding adhesive a better grip on the foam surface.

P/N 01-14880 ........................................ $587.80/ea.

VACUUM GAUGE - A dial faced vacuum gauge capable of displaying vacuum from 0" to 30" Hg. It is 2" in diameter and can be used on the vacuum pump line, holding tank, or with a vacuum valve to determine vacuum in specific areas of a bagged assembly. Fitting size: 1/4" NPT.

P/N 01-14894 ........................................ $128.95

VACUUM PUMP - Standard vacuum pump ideal for small shop vacuum bagging operations.

P/N 01-14891 ........................................ $443.00/ea.

VACUUM PUMP KIT - Includes vacuum pump, gauge, valve, fittings, and hose.

P/N 01-00164 ........................................ $550.00

P/N 02763 ........................................ $165.00

VACUUM RELIEF VALVE - BAGGING SUPPLIES STARTER KIT - Includes 10 yards of Vacuum Bagging Film #7400, 10 yards of 4.5oz. Breather Bleder #3, 1 roll 400° resistant Sealant Tape (25 yards/roll), 10 yards Dacron Fabric 1.80 oz x 60", & 10 yards x .001 Perforated Release Sheet. P/N 01-14894 ........................................ $192.75

ECONOMY VACUUM GENERATOR - a low cost and reliable method of generating a vacuum for those who already own an air compressor. The generator will create 27" of Hg vacuum/pressure when coupled in-line to an air compressor capable of producing 2.2 cfm. Larger air compressors are advisable for continuous use applications. Suitable for parts up to 80 ft2.

P/N 01-121148 ........................................ $192.75

RESIN LINE CLAMP FOR VACUUM INFUSION Clamp is designed to easily control vacuum and resin from fully on to fully off or anywhere in between. The ergonomic, over-sized, knurled knob gives precise control. It is simple to install and remove and is light enough to hang on the hose. Rugged all metal construction will provide years of service. It will not cut the hose like vise plier clamps. The bright anodized nylon knob makes it easy to find. Will accommodate hoses up to 1/2" OD and is made in the USA.

P/N 01-121200 ........................................ $16.95
A complete line of plastic repair and refinishing products, as well as instructional materials, which make plastic repair easy and effective. Why spend alot of money on aftermarket aircraft parts, when quality repairs can easily be made on the originals? The materials listed below are specifically engineered to be used on plastics and can be used to repair and refinish the following: Cracked or broken instrument panels, wingtips, fairings, yokes, wheel pants, all types of plastic fairings, strut and landing gear fillets, headset housings, antenna housings, stripped threads and cracked mounting holes in plastic components and more! These materials can also be used to fabricate missing sections of your existing component or to create small parts.

1000-A SUPER CLEAN PLASTIC CLEANER (19 FL.OZ.)
Before doing any sort of plastic repair, use Super Clean plastic cleaner to maximize the durability of your repair. Super Clean removes mold release agents, wax, grease, silicone, tar, bugs, sealers and other contaminants from painted or unpainted plastic or metal surfaces. It’s simple to use, just spray it on and wipe it off with a clean lint-free cloth.

P/N 01-00533 .................. $11.75

2020-T SMC HARD-SET FILLER
(2-5OZ. TUBES)
SMC Hard-set Filler is a 2-part epoxy system that is very rigid when fully cured. It works on ABS, SMC, fiberglass, polycarbonate and on any other repair application that requires a rigid, high impact resistant repair material. It has a working time of 3 to 4 minutes and is ready to sand in 15 minutes.

P/N 01-00534 ................. $21.60

2045W STAINLESS STEEL REINFORCING MESH
(50 SQ. IN.-5’X10’)
Reinforcing Wire Mesh is designed to be used to reinforce any repair made with an airless plastic welder. We recommend that the mesh be used to when a tear goes to the edge of the plastic. Since it is stainless steel, it is 5 times stronger than aluminum wire screen and is virtually impervious to oxidation under normal conditions. You can also use the mesh to fabricate tabs, fill holes and provide reinforcement in any meltable plastic.

P/N 01-00536 .................. $5.25

2020-L INSTA-WELD KIT
Each Insta-Weld Kit comes with Insta-Weld 1, Insta-Weld 2, Activator, and Weld Compound. A complete set of instructions is included with each kit. This kit is designed for all repairs on SMC, fiberglass, hard plastics, metals, rubber and other materials too numerous to mention. It does not work on polypropylene, polyethylene or TPO substrates. The small Insta-Weld Kit comes with a 1 oz. bottle of both the Insta-Weld 1, Insta-Weld 2 & 2 oz. bottle of Activator & weld compound.

P/N 01-00538 .................. $31.25

2020-1 INSTA-WELD 1 (THIN)
Insta-Weld 1 is our “thin” adhesive and is to be used when you have a clean break with no gap to fill. It has the consistency of water. To use, spray the broken area with 2303 Activator, clamp the parts together then apply a small amount of Insta-Weld 1. The adhesive will wick into the crack and create an instant repair. It does not work on polypropylene, polyethylene or TPO substrates.

P/N 01-00539 .................. $13.50

2020-2 INSTA-WELD 2 (THICK)
Insta-Weld 2 is our “thick” adhesive and is to be used when it is necessary to fill a gap. Insta-Weld 2 is about the consistency of 30 weight oil. To use, spray one side of the break with 2303 Activator, apply Insta-Weld 2 to the other side, then clamp together. It does not work on polypropylene, polyethylene, or TPO substrates.

P/N 01-00540 .................. $13.85

2303-3 INSTA-WELD ACTIVATOR (2FL. OZ. W/SPRAYER)
Our quick spray Activator causes instant curing of all Insta-Weld adhesives. Activator may be used before or after adhesive is applied. Come in plastic bottles and include sprayer.

P/N 01-00541 .................. $12.50

3800-4 FLEX-TEX FLEXIBLE TEXTURE MATERIAL (QUART)
Flex-Tex is a unique blend of materials designed to be used for re-texturing repaired areas on instrument panels, consoles, etc. A wide variety of pebble-grained textures can be achieved with this product by varying the air pressure, distance from work, and speed of pass. Apply with a regular spray gun or a PreVal sprayer. Dries flat black. Must be top-coated with color for durability and appearance.

P/N 01-00546 .................. $28.50

CS100 CLEAN SHEETS
Clean Sheets are great to have around the shop. They allow you to keep your epoxy mixes clean and smooth while saving time by always having a clean surface to mix on. No more cutting cardboard to mix epoxy. 100 sheets per board.

P/N 01-00550 .................. $32.50

2043-U UNI-CLOTH FIBERGLASS CLOTH (9 SQ.FT.)
Uni-Cloth is a quality fiberglass cloth that is well suited for reinforcing plastic repairs as well as any other application requiring fiberglass reinforcement.

P/N 01-00535 .................. $15.50

Plastics Repair Instructional Book - P/N 01-00554 .................. $28.25
Plastics Repair Instructional DVD - P/N 01-00555 .................. $14.95

AIRCRAFT SPRUCE WEST
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AIRCRAFT SPRUCE EAST
PEACHTREE CITY, GA • (877) 477-7823

Prices Subject to Change Without Notice
**GLASS BUBBLES**

These bubbles are actually hollow glass spheres. Because the high-quality glass is very crush resistant, the foam is much stronger, stiffer and water-resistant than any foam made by chemical foaming. These foams displace 4-6 times their weight in most resins and improve the handling characteristics of the base resin. They have a low bulk density and are nontoxic. Mix resin and hardener as directed, then fold in the glass bubbles. Upon cure, a strong, low-density product results which is easy to sand and file. May be shaped to form compound angles and curves. The term “micro” was applied to the mixture of microspheres and epoxy early in the development of composite structures. Although microspheres have been replaced by glass bubbles the word “micro” is still commonly used to reference the mixture. *Micro’ is used to fill voids and low areas, to glue foam blocks together and as a bond between foams and glass cloth. Micro is used in three consistencies – (1) a “slurry” which is a one-to-one by volume mix of epoxy and glass bubbles, (2) “wet micro” which is about two to four parts glass bubbles by volume to one part epoxy, and (3) “dry micro” which is a mix of epoxy with enough glass bubbles to obtain a paste which will not sag or run (about five parts to one by volume). In all instances glass bubbles are added to completely mixed epoxy resin and hardener. Wet micro is used to join foam blocks and is much thicker than slurry (it has the consistency of honey) but can be brushed. Dry micro is used to fill low spots and voids and is mixed so that it is a dry paste and will not sag. Apply with a putty knife. Never use micro between glass layers.

**CAUTION** – When mixing epoxy and glass bubbles, use a dust mask and keep your face away from the balloons that may float up into the air. Although glass balloons are inert, they can lodge in your eyes or in your lungs and cause problems. Handle with care.

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**DISPOSABLE ICING BAGS**

These 12” disposable icing bags are ideal for applying beads of any size of micro epoxy or epoxy foam to all surfaces. Great for close-outs and are real time savers. Simply fill, cut end to desired bead size and squeeze. Never breaks down from epoxy. Sold in packs of 100 bags Pack of 100 bags P/N 01-14710 $14.75

**FLOCKED COTTON FIBER**

A structural resin filler. The mixture of cotton fiber and epoxy is referred to as “flox”. The mixture is used in structural joints and in areas where a very hard, durable buildup is required. Flox is mixed in much the same way as dry micro but only about two parts flock to one part epoxy is required. Mix in just enough flock to make the mixture stand up. If “wet flox” is called out, mix it so it will sag or run. Flox is often used to reinforce a sharp corner. Paint a light coat of pure epoxy inside the corner, trowel flox in to make a triangular support. The flox corner is just done after glass is applied for a wet bond to one surface.

1 Lb. Bag P/N 01-14800 $3.95
5 Lb. Bag P/N 01-14900 $19.75

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**MILLED GLASS FIBERS**

As the name implies, this material is made by milling fiberglass into a very thin consistency. This material is used in preparing a structural filler. This material is used in filllets that require structural integrity. Milled fiber fillers have the highest strength than cotton flocked but have fine particles of fiberglass that can penetrate the skin. 1 Lb P/N 01-14780 $4.85

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**PLOUEZ DYMO DIGITAL SCALE**

Ultra-compact design for super portability. Features an LCD screen with easy-to-read digital readout. Convenient “hold” feature locks weight display for 10 seconds after item is removed.

Digital postal rates. Rates update with Internet display for ten seconds after item is removed. Convenient “hold” feature locks weight readout. Features an LCD screen with easy-to-read digital.

**3M™ #77 SPRAY ADHESIVE**

This aerosol spray adhesive works well to laminate styrofoam sheets together. Laminations cut well with a hot wire. Net wt. 16.75 oz. 24 fl. oz. Aerosol Spray Can P/N 09-28330 $18.50

**PUTTY FLEX FILLER**

Urethane Supply Company’s 1047 Putty Flex is a premium polyester finishing glaze that provides superior adhesion with excellent flexibility on plastics. Putty Flex produces excellent feather edge results on plastic, metal, SMC, fiberglass, cured primer and paint. Use to fill pinholes, dings, scrapes, sanding scratches and more! Putty Flex sands easily and resists clogging sandpaper.

P/N 01-00961 $23.75

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**ECONOMY DIGITAL SCALE**

LCD display that shows ounces, pounds or grams. "Tare" feature lets you "zero-out" container’s weight. Sealed buttons prevent damage from spills. Maximum capacity of 176 ounces (11 lbs. or 5000 grams) Automatic 40 second shutoff saves batteries. Not for commercial use. Uses four AA batteries, not included. Overall dimensions: 9-1/2”L x 6-3/4” W x 1-1/2” H P/N 12-02585 $32.50

**HI BUILD POLYESTER SANDING PRIMERS**

* Quick Build Primer * Quickly fills uneven surfaces, and major imperfections * Easy sanding prep for surface primer, top coats * Low VOC product * Perfect Primer for prestec top coats or any other surface coatings desired * Fairly Hi-Build to 120mil

**DYNALITE**

A formulation of polyester resin, talcs and Microspheres used as a lightweight filler on metal and fiberglass. Works easily, sands faster. Only 7.5 lbs. per gallon as compared to 12 lbs. per gallon for conventional fillers. 494 Gallon P/N 01-00368 $26.75 492 Quart P/N 01-01072 $11.70

**FLEX-IT**

A universal repair compound. It is excellent for rebuilding or fabricating parts and as an all-purpose adhesive for wood, metals, ceramic, glass, and many plastics. Fix-It can be tapped or drilled, sanded, filed or painted. Patch holes and cracks and seals leaks. Sets rock hard overnight. Fix-It Metal is the same as standard Fix-It except it is loaded with aluminum metal to match the strength, weight, and use for each project. Fix-It is non-toxic, non-hazardous, and impervious to fuels and liquids.

Fix-It 1/4 Lb kit P/N 01-14770 $10.95 Fix-It 1 Lb kit P/N 01-14775 $22.50 Fix-It Metal 1/4 Lb kit P/N 01-14790 $12.65 Fix-It Metal 1 Lb kit P/N 01-14795 $21.70

**MEGUIAR’S MOLD RELEASE #8**

Meguiar’s* Mold Release Wax is a blend of imported waxes specially formulated to provide a maximum number of releases per application. P/N 01-09415 $12.50

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Prices Subject to Change Without Notice
**SUPERFIL BY POLY-FIBER**

An ultra-light, corrosion-inhibiting filler for aircraft, marine and automotive use. Adheres to composites, bare aluminum, steel and bare or varnished wood. Easy to mix & apply; mix 2 parts A to 1 part B by weight; apply with squeegee; let dry overnight. Excellent sanding qualities. More consistent than hand-mixed micro. Wt: less than 5 lbs/gal. Ships Non-Hazmat.

1 Quart Kit (2oz. Resin/1oz Hdnr) P/N 09-02820...........$22.90
3 Gal Kit (2 gal. Resin/1 gal. Hdnr) P/N 09-02826...........$204.60

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**UV SMOOTH PRIME FILLER/PRIMER**

The pinhole killer! Waterborne polyurethane primer plus UV blocker applied with a foam roller or spray gun. Fills pinholes in layups or molded parts. White color. Once UV Smooth Prime has dried for 7 days, spray white two-part catalyzed Epoxy Primer to seal the surface and provide moisture and chemical resistance prior to spraying top coat paint. Dry sand for a smooth, pinhole-free surface. Dries in 20 minutes, sand in two hours. Clean up with water. Use Poly-Fiber Gun Cleaner to clean your spray gun after each day’s spraying. NON-HAZMAT. Three gallons required for most composite aircraft.

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**FEATHER FILL**

A sprayable polyester filler/primer used for filling of minor surface irregularities such as scratches, blemishes and exposed fiberglass threads before final sanding and painting. It adheres to bare metal, plastic filler and fiberglass with minimal surface preparation. Cures ready to sand and paint in 45 - 60 minutes. Any type of finish - lacquer, enamel, acrylics - can be applied over Feather Fill with excellent adhesion. Quart kit includes catalyst and instructions. Approximately six quarts are required for finishing a Vair-Eze. DO NOT WET SAND.

#401 (1 Qt.) P/N 01-00369...........$49.90
#391 (1 Gal.) P/N 01-00370...........$139.90

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**RUST DEFENDER SANDABLE FILLER**

A one step finishing material from bare metal, body filler plastic, wood, aluminum, or fiberglass to a surface ready to accept any type of paint without concern about penetration of solvents or moisture. Provides fast build-up and fill, is non-shrinking, easy sanding, wet sandable and waterproof, and self-etching. Can be sprayed or brushed on and can be built up like Bondo or Featherfill. Ready to sand in one hour, and it does not clog up your sandpaper. Pot life and cure time are about one hour at 70 degrees Fahrenheit. Versatile polyester filler.

Quart P/N 01-00058...........$78.65
Gallon P/N 01-00059...........$174.75

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**FILL BOND PUTTY**

Fill Bond aerospace putty from Sherwin-Williams Aerospace Coatings has been created specifically for aerospace use. Designed to fill rivets, seams and small spot-repair areas on the exterior of aircraft fuselage and wings, this high-build body filler is now available in a convenient epoxy version. Fill Bond putty is extremely flexible, offers direct-to-metal adhesion (with properly pretreated aluminum), provides excellent spreadability and offers a long, workable pot life to give users the amount of time to apply material on a variety of aircraft surfaces, including aluminum and composites. The epoxy putty dries quickly for a fast sand - in just two to six hours. A specially-designed Fill Bond dispensing gun enables users to apply putty exactly where it is needed without requiring additional tools. There’s minimal waste following application. Users apply only as much product as they need and then can put the cap back on the convenient cartridge containers for later use, saving on material and disposal costs.

Fill Bond Cartridge 750ML P/N 01-01124...........$109.85
Fill Bond Cartridge 375ML P/N 01-01125...........$80.17
Manual Dispensing Gun 370ML P/N 01-01126...........$143.80
Manual Dispensing Gun 750ML P/N 01-01127...........$243.95
Static Mixer Element P/N 01-01128...........$6.50

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**AEROPOXY LIGHT FILLER**

AEROPoxy Light is a two-component, lightweight epoxy patching and filler paste for foam, wood, and composite surfaces. It mixes easily, applies smoothly, bonds strongly and sands quickly to make the hard job of surface filling much easier.

**HYSOL EPOXY PATCH KITS**

EPL0151 is a clear two part resin / hardener which is ideal for bonding fiberglass, PVC, and graphite. Cure time is 6-8 hours. EPL101C is a white 2-part resin / hardener epoxy system which is used to bond aluminum and ceramics. EPL0151 Kit 3.35 oz. fiberglass) P/N 01-15875...........$13.85
EPL101C Kit 4.0 oz kit (aluminum) P/N 01-15880...........$11.85

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**LITE WEIGHT FILLER**

Lite Weight autobody filler is a very versatile filler which is excellent for holding jig blocks in place during composite construction. Applies evenly and allows sanding within minutes. Cures well even in humid climates. Creme hardener is included.

Quart P/N 01-00243...........$17.50
Gallon P/N 01-00244...........$27.65

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**WEST SYSTEM 410 MICROLIGHT**

An excellent filler which provides easy workability for a variety of applications. Easy to sand and cures to a neutral tan color.

1.7 Oz P/N 01-08780...........$15.69
4.3 Oz P/N 01-08785...........$31.10

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**EPOXY SURFACE COAT**

#1099 is a white, thickened epoxy material used to created the durable surface coat on room temperature epoxy molds. This surface coat can be brushed on as thick as 1/8” at a time without developing runs or sags. It is specially formulated to provide strong interlaminar bonds with the reinforcing materials, even if it is left unsupported overnight. #1099 readily accepts all our pigments, resists all type of UV light, and retains its high gloss.

Mix Ratio by Weight - 100:11
3.33 lb. Quart kit P/N 09-01099...........$71.85
Case P/N 09-01099-1...........$544.00

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**PRIME COAT PRIMER / FILLER**

Prime Coat is a sandable, quick-drying aerosol primer which fills pin holes and scratches caused by sanding on fiberglass, wood, metals and many plastics. Prime Coat will prepare the surface of materials for the finish coat and provides an effective corrosion barrier as well. Prime Coat is zinc chromate yellow and can be used under lacquer, enamel, acrylic or epoxy finish coats. 11 oz. can.

P/N 01-00305...........$11.50

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**TYPICAL SETTING TIMES**

<table>
<thead>
<tr>
<th>Test Method</th>
<th>Visual</th>
<th>Gel Time 100 gms</th>
<th>Cured Hardness</th>
<th>Compressive Strength</th>
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<tbody>
<tr>
<td>ASTM D2240</td>
<td>24 hrs. Full Cure</td>
<td>6-8 hrs. To Sand</td>
<td>53 Shore D</td>
<td>2156 psi</td>
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<tr>
<td>ASTM D979</td>
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<td>ASTM D695</td>
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**FILLERS – PRIMERS**

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**AIRCRAFT SPRUCE EAST**
Peachtree City, GA • (877) 477-7823

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**PEEL PLY – PRIMERS – PAINTS**

### PEEL PLY

A layer of 2.7 oz. Dacron fabric strips or tape laminated into a layup as if it were an extra ply of glass. The peel coat wets out with epoxy like glass cloth and cures along with the rest of the layup. However, the Dacron does not adhere structurally to the glass and when peeled away it leaves a surface ready for glass-to-glass bonding without sanding.

**Requirements for Small Aircraft:**
- 3 Rolls of 1” x 50 Yds. Tape • 2 Rolls of 2” x 50 Yds. Tape
- 1 Roll of 3” x 50 Yds. Tape • 1 Roll of 4” x 50 Yds. Tape

### POL-EASE® 2300 MOLD RELEASE

Provides superior release with minimum buildup on mold surfaces for casting urethane elastomers, epoxy, polyester, and rubber compounds. Molded parts are easily cleaned for finishing operations. It is effective on aluminum, steel, epoxy, polyester, and elastomeric molds; it does not distort intricate patterns.

P/N 01-31749 $27.75

### MAXIMUM MOLD RELEASE WAX

Meguiar’s® Mold Release Wax is a blend of imported waxes specially formulated to provide a maximum number of releases per application.

P/N 01-09415 $12.50

### MOLD RELEASE WAX

High-temperature paste wax. 14 oz.

P/N 01-00177 $16.90

### FIBERGLASS MOLD RELEASE

Plastilease 512B, a film-forming, water soluble parting agent, assures clean release of fiberglass parts from molds. For application by brush or spray.

P/N 01-30600 $31.75/Qt.

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**LPS MRX SILICONE MOLD RELEASE**

Excellent for releasing molded parts in high temperature and extreme pressure environments. MRX Silicone Spray Mold Release provides maximum releases and superior value for the end-user. This non-staining, non-corrosive mold release is heat stable up to 500°F. It is a nonflammable product and contains no class I or II ozone depleting chemicals. Like all LPS MR-series mold releases, MRX Silicone Spray Mold Release doesn’t use Methylene Chloride.

16 oz. aerosol can. P/N 09-00271 $12.85

**PVA RELEASE FILM**

PVA (Polyvinyl Alcohol) should be used with #1016 Wax to aid in the release of parts form a mold. It should be applied in 3 thin mist coats over nonporous, waxed mold surfaces. After the final wax coat has dried, begin by spraying a light tack coat of PVA. Typically, within 5 mins. the final heavier coats can be added. The PVA dries to form a smooth, glossy film. After part release, the residual film can be removed with water. We recommend using an inexpensive automotive siphon spray gun and 70-90 psi for application, although airbrushes will work on hobby size projects. PVA can also be sprayed over any polyester repair to provide an airless tack-free cure. For use with epoxies.

P/N 01-14813A $22.85/qt

**ZOLATONE COCKPIT PAINT**

Used to paint cockpit interiors, excellent on fiberglass. Gives a coarse, durable, professional finish. 1 gallon required for Long-EZ cockpit. Primer not required when used on fiberglass. Color chart available on request. Order Color Chart P/N 01-15815.

<table>
<thead>
<tr>
<th>Color</th>
<th>Use Primer</th>
<th>Part No.</th>
<th>Price</th>
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<tbody>
<tr>
<td>White/White</td>
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<td>20-02</td>
<td>$143.75</td>
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<tr>
<td>Apollo Gray</td>
<td>-</td>
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<td>Hamlet Black</td>
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<td>Camille White</td>
<td>White</td>
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<td>Lilith Charcoal</td>
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<td>Bright Blue</td>
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<td>Dark Red</td>
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<td>20-85</td>
<td>$129.85</td>
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</tbody>
</table>

**HI GLOSS CLEAR POLYESTER TOP COAT**

Features: * Super Clear - Glass like appearance * Scratch Resistant * Buffs to a Super Hi-Gloss Finish * Refinishes to Original Hi-Gloss * Practically a Walk-A-Way Gloss Finish Product Applications: * Exotic wood coating * Gel coat additive for air cure application * Musical instrument wood coating * Top coat over clear primers * Top coat over pigmented colors for clear depth * Automotive interior composite parts clear coating * Archetectural wood coating * Interior trim applications

Quart P/N 09-02168 $36.50

Gallon P/N 09-02169 $104.50

Requires Catalyst P/N 01-01119.

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COMPOSITE TOOLS

AIRCRAFT DESIGNER APPROVED TOOLS

The tools offered in this section have been selected by professional aircraft designers and builders as being either necessary or highly desirable for working with composite structures.

KUT-MASTER FOAM CUTTING FRAME

These custom-built foam cutting frames can help produce professional results in foam cutting for the amateur builder. Constructed of 1-1/8" O.D. aluminum tubing, the heli-arc welded frame is lightweight yet extremely durable. The frames come completely pre-wired and ready to attach to the voltage controls shown below, and a tensioning system maintains uniform wire tension throughout the cutting process. The frames are stocked in 3 standard lengths, and custom frames are available on request (send sketch). Cutting depth is 11". Weight - 5 lbs.

2 Ft. Frame P/N 01-15200 $197.00
3 Ft. Frame P/N 01-15300 $218.00
4 Ft. Frame P/N 01-15400 $234.00

HOMEBUILDERS SPECIAL HOTWIRE KIT

An excellent new hot wire system consisting of a controller and transformer. Recommended by Rutan Aircraft Factory as a good system at a very economical price.

P/N 01-15600 $43.75

SAFETY WIRE

Type 302 stainless steel safety wire, for hot wire cutter. This is superior to nichrome wire, which is brittle and breaks easily. Specify .032" or .041" diameter wire.

.032" Dia. Wire, 25 Ft. Coil P/N 01-15725 $1.25
.041" Dia. Wire, 25 Ft. Coil P/N 01-15825 $1.25
1 Lb. Spool P/N 05-02687 $7.80

INCONEL 600 HOT WIRE

Does not stretch. Excellent for hotwiring polystyrene foam.

.032" Dia. Wire P/N 01-15805 $0.35 ft.
.041" Dia. Wire P/N 01-15810 $0.24 ft.

MUSIC WIRE

Music wire is high carbon steel and although very high in tensile strength, must be capable of wrapping around itself without showing signs of cracking. 156 ft. of .049" dia. wire per lb., 46 ft. of .090" dia. wire, per lb. 22 Ga. Price is per pound.

.049" Dia. (11 lbs.) P/N 03-49500 $3.97
.090" Dia. (32 Ga, 1 lbs.) P/N 03-49600 $4.35

TYPE 302 STAINLESS SPRING WIRE

.062" Dia. P/N 03-49610 $0.26 ft

MICHAEL ENGINEERING EPOXY RATIO PUMPS

This highly recommended pump, aptly called "Sticky-Stuff Dispenser," will save about $50 in epoxy in building a VE type aircraft, plus time, mess, dermatitis, temper and risk of bad batches. Used by individual craftsmen and professionals alike, it is a practical engineering tool especially designed to eliminate the sticky, messy, costly hand proportioning of epoxy resins. It is well built and should last through the construction of dozens of aircraft. The Sticky-Stuff Dispenser assures accurate measurement of low-viscosity (under 3,500 centipoises) unfilled epoxy resin. The standard Model A dispenser pump delivers a ratio of 100 parts of resin to 44 parts of hardener.

Adjustable Ratio Pump P/N 01-16010 $298.00
Rebuild Kit for 45:100 pump P/N 01-00504 $75.00
Small Round Replacement Container (qt) P/N 01-15920 $11.50
Large Square Replacement Container (gal) P/N 01-15910 $17.75
Stainless Steel Check Valve (Use with Jeffco epoxies) P/N 01-00258 $56.50

CALRAD VARIABLE VOLTAGE CONTROL

A fine quality control to supply the electrical current for hot-wire cutting of styrofoam and PVC foam. One unit can serve to build many aircraft. Input 115 volts AC Output variable from 0 to 130 volts AC at 5 amps. Caution - fuse should be inserted in the secondary to protect the control in the event of a short circuit. Input: 117V AC, 60Hz 3-Prong AC cord. Output: 0-130V AC Adj 60Hz; volt meter, power jack. Fuse Protection AGC: 5 Amp. Max: 500VA

P/N 01-01294 $174.75

COMPOSITE TOOL KIT

This kit includes an assortment of many of the commonly required tools used in composite construction.

QTY. PART NO. DESCRIPTION

1 20W Glass Shears
1 box 01-25800 500 Mixing Sticks
2 boxes 01-25700 12 oz. Mixing Cups
2 boxes 01-25710 16 oz. Mixing Cups
10 01-24899 3" Plastic Squeegee
10 09-21210 1" Disposable Brushes
10 09-21300 2" Disposable Brushes
1 09-21570 12-01380 Electronic Scale
2 boxes 01-36550 Latex Gloves
1 GLR123D 1/2" x 3" Laminating Roller
1 GLR2C 1/2" Corner Roller
1 GLR26 2" x 6" Plastic Grooved Roller

Kit - P/N 01-00166 $211.95
DISPOSABLE RESPIRATOR REPLACEMENT PARTS

Dusts, Mists, & Fumes Pre-Filter.................. P/N 01-00382 .............. $1.65
Fit/Check Filter Cover .................. P/N 7500-27 .............. $2.30

GROOVED LAMINATING ROLLERS

These are the standard laminated rollers for wetting out woven roving and mat with polyester resin. Use with epoxy resin for applying tape into corners and for spreading thickened epoxy over large areas for gluing and fairing.

1" x 3" ........................................... P/N 01-01054 .............. $8.85
1" x 6" ........................................... P/N 01-00396 .............. $11.95
1" x 9" ........................................... P/N 01-00383 .............. $16.85
2" x 3" ........................................... P/N 01-00384 .............. $10.95
2" x 6" ........................................... P/N 01-00385 .............. $16.65
2" x 9" ........................................... P/N 01-00386 .............. $23.70
1/4" Corner Roller .................. P/N 01-00387 .............. $10.95
1/2" Corner Roller .................. P/N 01-00388 .............. $10.95
1/2" x 3" Detail Roller .................. P/N 00389 .............. $7.65
3/4" x 3" Detail Roller .................. P/N 01-00390 .............. $8.95
3/4" x 6" Detail Roller .................. P/N 01-00391 .............. $10.65

EPOXY LAYUP ROLLERS

3" wide roller with stipple adhesive cover. Has excellent stippling action for working out air bubbles in layups and has no tendency to lift the cloth. Use on all major layups. Order frame and cover separately.

Roller Frame Only .................. P/N 01-24902 .............. $6.75
Cover Only .................. P/N 01-24903 .............. $4.35

PRECISE ACCU-KNIFE SET

Heavy duty cutting edges. Complete knife set. Over 40 blades to choose from.
Specifications: • Blades are made of the highest-grade steel and are ground to razor sharpness for precision cutting. • Features include positive-holding blade lock • Nonslip handles. Complete with 8 different handles • 44 sharp blades • An aluminum-oxide, wet/dry sharpening stone • Packed in a handy plastic carrying-storage case with magnets to keep the blades in place.

Fine precision cutting tools for the lab-highest quality knife set. Ultra-micro to heavy-duty cutting edges are perfect for corks, paraffin, plant samples, and rubber tubing. Exceptionally sharp knives are ideal for delicate, close-tolerance, accurate cutting needs.

High-grade steel construction - Blades are made of the highest-grade steel and are ground to razor sharpness for precision cutting. Features include positive-holding blade lock, nonslip handles, and a perfect weight for balance.

Over 40 blades - Comes complete with 8 different handles, 44 sharp blades, and an aluminum-oxide, wet/dry sharpening stone. Set is packed in a handy plastic carrying-storage case with magnets to keep the blades in place.

P/N 12-00381 .............. $67.50

DISPENSER FOR MEKP CATALYST

Perfect to measure and pour catalyst. The bottle will hold 16 oz. of catalyst and dispenses liquid safely and accurately from 2.5 to 35 cc. Measurements are instantly repeatable.

P/N 01-08503 .................. $12.65

POST CURE KIT

This kit consists of one post cure thermometer (P/N 01-00394) and 1 regulating thermostat (P/N 08-12148) that allows control of electrical devices for heating.

Snap Disc Fan Control 3/4 inch SPST Flanged Airstream Mount, Open On Rise, 180°F Cut-Out Temperature, 40°F Differential. Therm-O-Disc Style 60T11, Type 610013 ......... P/N 01-00393 .............. $22.00

EPOXY LAYUP ROLLERS

JIFFY MIXER

This is a very effective 2-1/2” diameter stainless steel mixer on a 15” shaft. Attach to an air drill for fast, efficient mixing of larger batches. It will not dig into or gouge the sides or bottom of your mixing container.

P/N 01-00395 .................. $22.60

X-ACTO TOOLS

NO. 5282 KNIFE SET -
Nos. 1, 2 and 5 knives plus 10 assorted extra blades Handy, fitted chest.

P/N 01-17300 .................. $29.75

NO. 5083 KNIFE SET -
Nos. 1, 2 and 6 knives plus 14 assorted extra blades in beautiful wooden chest.

P/N 01-17400 .................. $48.50


P/N 01-16500 .................. $6.60


P/N 01-16600 .................. $2.95

Other X-Acto items also available. Call for pricing.
**COMPOSITE TOOLS**

**STANLEY TOOLS**

**STANLEY TAPE MEASURE**

This 12 foot steel tape measure, with 1/2” blade, is graduated in tenths and hundredths of inches and also in fractions of inches (32nds). Very handy for all aircraft construction. A “must” for composite construction.

No. 33-272  P/N 33-272  $19.80

**STANLEY UTILITY KNIFE**

Aluminum, die-cast in two sections - provides blade storage. Has handy hang hole. Furnished with No. 11-921 blade and blade guard.

No. 10-099  P/N 10-099  $7.80

**KNIFE BLADE**

Heavy-duty pointed razor-type utility knife blade for No. 10-099 knife and most other makes of utility knives.

No. 11-921 (Pkg. of 5 Blades)  P/N 11-921  $2.45

**HOOK BLADE**

For use with No. 10-099 knife and most other makes of utility knives to cut linoleum, roofing material, cartons, etc., without damage. The razor-sharp hooked ends cut to full thickness in one stroke.

No. 11-961 (Pkg. of 5 Blades)  P/N 11-961  $6.20

**SPRING CLAMPS**

Heavy-gauge steel clamps with vinyl grips and tips to prevent marring work. Jaws specially formed to hold flat or round objects. Two sizes available:

No. 3201-HT – Jaw Opening 1”, Length 4”  P/N 83-261  $2.75

No. 3202-HT – Jaw Opening 2”, Length 6”  P/N 83-262  $4.50

**SINGLE-EDGE RAZOR BLADES**

Used for trimming rough edges of laminates.

P/N 01-24904  $0.15/ea.

Box of 100  30% Discount.

**DOVETAIL SAW**

Cuts a true, smooth and narrow kerf. Comfortable hardwood handle provides positive grip. Professional quality.

No. 15-022  P/N 15-140  $27.90

**STRAIGHT EDGE**

A 6-ft. long kiln-dried spruce board, 7/8” to 1” thick and 3” to 4” wide, used for checking the straightness of flying surfaces during composite construction.

P/N 01-25900  $16.85

**6” STEEL RULER**

Flexible stainless steel rule graduated in 10ths and 100ths on one side and in quick-reading 32nds and 64ths on the other side.

6 inch  P/N 616  $5.35

12 inch  P/N 12-02062  $8.95

**FELT TIP MARKERS**

Used for marking locations on fiberglass throughout construction.

P/N 01-26000  $0.42

**12” LONG DRILL BITS**

For use with standard electric drill for hard-to-reach jobs.

#10 (.1935” Dia.)  P/N 12-05500  $7.75

1/4” Dia.  P/N 12-05600  $8.50

**COUNTERSINK**

This assembly consists of a 1/2” dia. AT416-4 100° cutter, a 1/4” dia. AT416- pilot and an AT409-1 adapter with 1/4” dia. shank for use with a hand drill. The adapter has a collet-like shaft to securely hold the replaceable pilot. Add pilot dash number to AT409. To complete part number see tool section for complete selection of pilots.

Complete Assemblies  See Page 707

**COUNTERBORE**

A 5/8” diameter boring tool, with 1/4” diameter pilot. 10” threaded extension is used for boring holes in hard to reach places. Used in the installation of the landing gear on the LongEZ and Cozy aircraft. 3/4” bore does not have 1/4” pilot and must use the pilot received with the 5/8” boring tool.

5/8” diameter w/pilot  P/N 12-00219  $55.75

3/4” diameter without pilot  P/N 12-00220  $49.85

**MINI GLUE TIP**

Fits most Yorker top dispenser bottles. Just slip a Mini Glue Tip on spout and seal with a pin. Always ready for use-no fuss to fill, no mess to clean. Made of polypropylene - glues don’t stick. For shallow tip bends, heat in water, shape with fingers until cool.

P/N 01-27000  Pkg. of 4 Tips  $1.40

**RUBBER SEALANT**

No. 732 RTV general-purpose, clear, one-part silicone rubber. Cures to a firm silicone rubber in 24 hours at room temperature.

4.7 Oz. Tube  P/N 09-27800  $7.95
## COMPOSITE TOOLS

### ROTARY (“PIZZA”) CUTTER

Makes clean cuts on fiberglass fabrics and other materials. The disc blade is made of high-quality tungsten steel which is very sharp. Used by high-volume composite shops. Use with wooden backing board and handle knife with caution.

- RTY-2 Cutter…………………………………… P/N 01-00299………………… $15.75
- Replacement Blade…………………………… P/N 01-00300………………… $6.95
- Blades (5 Pack)………………………………… P/N 01-00301………………… $27.75
- Replacement Pinking Blade………………….. P/N 12-01709………………… $9.75

### ALUMINUM ROTARY CUTTER FOR COMPOSITE WORK

This all aluminum cutter however, will not “melt” when exposed to acetone, methylene chloride and other chemicals used to clean the cutters after use on wet layups. After use the aluminum rotary cutter is cleaned by simply leaving it in a can filled with acetone.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Rotary Cutter</td>
<td>09-24906</td>
<td>$38.85</td>
</tr>
</tbody>
</table>

### 90 DEGREE ALUMINUM ROTARY CUTTER FOR COMPOSITE WORK

This cutter handle is all aluminum with special stainless hardware for easy assembly when changing out rotary cutter blade. Will not melt when exposed to acetone, methylene chloride, and other chemicals. Good for wet layups. To clean, just drop in small container of acetone. P/N 01-01047………………… $36.50

### PAINT BRUSHES

Natural, undyed bristle brushes with smooth, unpainted wooden handles. Unaffected by paints, dopes, resins, thinners or solvents.

- 1” Wide Brush………………………………… P/N 09-21200………………… $0.43
- 2” Wide Brush………………………………… P/N 09-21300………………… $0.59

### RUBBER SQUEEGEE

Developed especially for working with epoxies, this 6”, or 36” wide hard rubber squeegee is superior to the plastic types. Can be easily cleaned and reused many times.

- 6” Squeegee……………………………………… P/N 01-24901………………… $3.95 ea
- 36” Squeegee……………………………………… P/N 01-00012………………… $24.60 ea

### NOTCHED SPREADER

This plastic spreader is excellent for spreading epoxy at a steady rate to provide an even surface. Measures 4” x 4” and is notched on three sides in increments of 1/8”, 3/16”, 1/4”.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notched Spreader</td>
<td>01-24909</td>
<td>$0.97 ea</td>
</tr>
</tbody>
</table>

### ORDER ONLINE!

www.aircraftspruce.com

- 80,000 Parts!
- 24 Hour Access!
- Fast, Easy Navigation!

### GRADUATED TAPER-TIP APPLICATOR

This graduated 2 oz. syringe is ideal for measuring and dispensing precise amounts of resins and other liquids. Note: The ink used for the graduation lines are not solvent resistant. They will rub off if contacted with a solvent.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispenser Bottle</td>
<td>01-25635</td>
<td>$4.85</td>
</tr>
</tbody>
</table>

### INDUSTRIAL SYRINGE

Made of hi-impact polyethylene with seamless body and special safety-grip plunger. Capacity 10 cc. Tapered dispensing nozzle can be clipped with scissors at proper diameter to govern output. Excellent epoxy dispenser.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Syringe</td>
<td>01-25000</td>
<td>$2.75</td>
</tr>
</tbody>
</table>

### MIL GAUGES

These color-coded mil gauges are solid anodized aluminum for long life and come in four sizes for a variety of FRP applications. Machined to close tolerances (0.0001”) for accuracy and available in mils (inches) and microns (metric).

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-18 mils</td>
<td>01-00411</td>
<td>$5.25</td>
</tr>
<tr>
<td>10-35 mils</td>
<td>01-00412</td>
<td>$5.75</td>
</tr>
<tr>
<td>40-65 mils</td>
<td>01-00413</td>
<td>$3.65</td>
</tr>
</tbody>
</table>

### MULTI-MEASURE PLASTIC CONTAINERS

Use again and again for liquid ingredient accuracy. A must-have item when mixing resins. Seal the liquid in the container with the matching sized plastic lid.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Qt. mix cup</td>
<td>01-00915</td>
<td>$0.95</td>
</tr>
<tr>
<td>1 Qt. lid</td>
<td>01-00926</td>
<td>$0.60</td>
</tr>
<tr>
<td>2.5 Qt. mixing cup</td>
<td>01-00330</td>
<td>$1.84</td>
</tr>
<tr>
<td>2.5 Qt. lid</td>
<td>01-00331</td>
<td>$0.91</td>
</tr>
</tbody>
</table>

### EPOXY MIXING CUPS

Unwaxed, flat bottom paper cups in three convenient sizes for small mixes.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Oz. ...........(100 Cups)</td>
<td>01-25600</td>
<td>$7.85</td>
</tr>
<tr>
<td>8 Oz. ...........(50 Cups)</td>
<td>01-00416</td>
<td>$9.85</td>
</tr>
<tr>
<td>12 Oz. ..........(60 Cups)</td>
<td>01-25700</td>
<td>$14.75</td>
</tr>
<tr>
<td>16 Oz. ...........(24 Cups)</td>
<td>01-00324</td>
<td>$7.95</td>
</tr>
</tbody>
</table>

### MIXING STICKS

These mixing sticks are medical tongue depressors which work well for mixing small batches of epoxy. Size: 3/4” x 6”.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box of 500...........</td>
<td>01-25800</td>
<td>$10.85</td>
</tr>
</tbody>
</table>

### TAPERED OFFSET SPATULA

This tapered spatula is stainless steel with wood handle. Ideal for making 3/8” radii on bulkheads, ribs, or anywhere a uniform radius is required.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>P/N</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatula</td>
<td>01-24915</td>
<td>$3.75 ea</td>
</tr>
</tbody>
</table>
COMPOSITE TOOLS


P/N 01-18701 $79.75

DREMEL 543 CUTTING / SHAPING WHEEL - For cutting and shaping on soft and hard woods, fiberglass, plastics and laminates (not metal). This versatile wheel is coated with tungsten carbide grit for long life. It is coated on both sides, so it cuts and finishes in one operation. Ideal when one speed is all you need or for shaping, hollowing, grooving, slotting, inlaying and making tapered holes in soft metals, plastics and woods especially on curved surfaces.

Cutter Size Part No. Price Cutter Size Part No. Price
#911 7/16" 01-00133 $2.45 #945 3/16" 01-00138 $2.45
#932 3/8" 01-00137 $2.45 #957 5/8" 01-00139 $2.45
#941 5/8" 01-00132 $2.48 #953 1/4" 01-00140 $2.45

Cutter Size Part No. Price Cutter Size Part No. Price
#971 5/16" 01-00142 $2.45 #8175 3/16" 01-00146 $2.45
#997 3/16" 01-00143 $2.45 #8193 3/16" 01-00147 $2.45
#8153 3/16" 01-00144 $2.45 #8215 3/16" 01-00148 $2.45

DREMEL 543 CUTTING / SHAPING WHEEL - For cutting and shaping on soft and hard woods, fiberglass, plastics and laminates (not metal.) This versatile wheel is coated with tungsten carbide grit for long life. It is coated on both sides, so it cuts and finishes in one operation.

Cutter Size Part No. Price Cutter Size Part No. Price
#9933 1/4" 01-00148 $12.75 #9934 5/16" 01-00149 $12.75
#9935 1/4" 01-00151 $12.75 #9936 5/16" 01-00152 $12.75

ALUMINUM OXIDE GRINDING STONES

Use on metals, castings, welded joints, rivets and rust. Ideal for sharpening, deburring and general purpose grinding of most materials.

Cutter Size Part No. Price Cutter Size Part No. Price
903 1/4" 01-00140 $2.45 911 1/8" 01-00141 $2.45
911 1/8" 01-00141 $2.45 941 3/16" 01-00142 $2.45
921 5/32" 01-00143 $2.45 952 3/16" 01-00144 $2.45
932 3/32" 01-00145 $2.45 953 1/8" 01-00146 $2.45
941 3/16" 01-00142 $2.45 954 1/16" 01-00147 $2.45
971 1/8" 01-00141 $2.45 997 5/32" 01-00143 $2.45
999 5/32" 01-00143 $2.45 9153 3/16" 01-00144 $2.45

HIGH SPEED CUTTERS

High Speed Cutters can be used for shaping, hollowing, grooving, slotting, making tapered holes in soft metals, plastics and woods. Number 198 and 199 cutters can be used to make small slits.

Cutter Size Part No. Price Cutter Size Part No. Price
#100 1/4" 01-19200 $4.90 #134 5/16" 01-19800 $4.90
#114 5/16" 01-19300 $4.90 #144 5/16" 01-20000 $5.95
#115 5/16" 01-20800 $7.50 #190 3/32" 01-20200 $4.95
#116 1/4" 01-20900 $4.90 #191 1/8" 01-20300 $4.90
#117 1/4" 01-21200 $7.50 #193 5/64" 01-20500 $4.90
#118 1/8" 01-21200 $4.90 #194 1/8" 01-20600 $6.95
#121 1/4" 01-19400 $4.90 #192 3/16" 01-20400 $7.50
#124 5/16" 01-19600 $4.90 #196 7/32" 01-20700 $7.50
#125 1/4" 01-21300 $7.50 #199 3/8" 01-21700 $4.95
SANDING BLOCK
A hard rubber tool which comfortably fits the hand for scratch-to-finish sanding. Used by professionals for years in all sanding operations. Simply cut a piece of sandpaper 2-3/4" x 9" and insert each end into the sanding block. Paper is held securely by nail retainers. Makes the sanding operation much easier.

Model No. 100........................................P/N 01-26400..................................$10.50

SANDPAPER
The weights and grits listed have been found to be the most effective for sanding fiberglass/epoxy surfaces. Sheet Size: 9" x 11".

<table>
<thead>
<tr>
<th>Sandpaper Type</th>
<th>Part No.</th>
<th>Price per Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Oxide</td>
<td>Open Coat &quot;D&quot; 09-20550</td>
<td>$1.15</td>
</tr>
<tr>
<td>Weight</td>
<td>01-26200</td>
<td>$1.55</td>
</tr>
</tbody>
</table>

SANDPAPER 3M™
Wet or dry Tri-M-Ite (3M) is a silicon carbide abrasive paper made especially for producing satin-smooth finishes on metal and other doped, lacquered or enameled surfaces. Wet or dry performs best when used with water or oil, but can also be used dry. Sheet size 9" x 11". Available in 220-A, 280-A, 320-A or 400-A grit.

<table>
<thead>
<tr>
<th>Sandpaper Grit Size</th>
<th>Part No.</th>
<th>Price per Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-A</td>
<td>09-20950</td>
<td>$0.98</td>
</tr>
<tr>
<td>220-A</td>
<td>09-20600</td>
<td>$0.96</td>
</tr>
<tr>
<td>280-A</td>
<td>09-20700</td>
<td>$0.95</td>
</tr>
<tr>
<td>320-A</td>
<td>09-20800</td>
<td>$1.06</td>
</tr>
<tr>
<td>400-A</td>
<td>09-20900</td>
<td>$0.96</td>
</tr>
</tbody>
</table>

CURVED TOOTH FILE
Milled files designed for smooth, fast work on annealed steels, hard plastics and composite materials. 14" length, 1-11/32x5/16 sections, 8 teeth per inch.

CURVED TOOTH FILE
A unique sanding tool which uses a 1-1/2" wide strip of sandpaper formed to make a belt. Locked taut by a patented mechanism that snaps into place with a finger pull. Its knife edge sides and padded body sand close to right angle fittings & fit into small concave recesses. Sander body is 7/8" x 4"1/2 and made of high impact plastic. Buy made belts or make your own (6 belts from standard sheet).

Preppin' Weapon is a handy sanding block made of Styrofoam core and high impact ABS that won’t break when dropped. Easy to grip for wet or dry sanding. Contoured to fit the shape of a hand and is sized to fit a 14" sheet of plain backed 8 x 11 sandpaper or a 2 3/4" wide file paper. It’s coil spring design holds single or multiple sheets equally tight and saves reloading time by stacking up to 4 sheets and tearing them away as the abrasive wears out. Save reloading time by using colors to indicate grits. Excellent for builders of aircraft, boats, cars, etc.

MINI-SANDER
A handy sanding block made of Styrofoam core and high impact ABS that won’t break when dropped. Easy to grip for wet or dry sanding. Contoured to fit the shape of a hand and is sized to fit a 14" sheet of plain backed 8 x 11 sandpaper or a 2 3/4" wide file paper. It’s coil spring design holds single or multiple sheets equally tight and saves reloading time by stacking up to 4 sheets and tearing them away as the abrasive wears out. Save reloading time by using colors to indicate grits. Excellent for builders of aircraft, boats, cars, etc.

PERMA-GRIT CONTOUR SANDING BLOCKS
These user friendly sanding blocks are made from extruded, anodized aluminum. The 32mm (1.25") Radius Curve is covered on the external and internal radius with Tungsten Carbide abrasive sheets. The Contour Blocks come in either the Coarse (60US grit approx.) or Fine (120US grit approx.) Small block is 5.5" long and large block is 11" long.

Benefits:
• Shape and sand curves, grooves, etc. quickly and easily
• Great for fillets, leading edges, under cambers, etc.
• Extremely tough, will not wear out like normal sandpaper
• Will last for years without having to change the sheets
• Does not clog easily (brush or knock out)
• Easy to remove glues, resins, paint, epoxy et c/w paint remover

Sanding Detailer is ideal for finishing those hard to reach areas. The abrasive belt can be indexed after the abrasive belt is used up, the user can simply compress the tool to put tension on the abrasive belt. The Sanding Detailer is spring loaded to put tension on the abrasive belt. The Finishing Kit includes:

The Standard Kit includes (shown in picture):
1 Gray 80 Grit
1 Red 120 Grit
1 Orange 180 Grit
1 Blue 240 Grit
Grit tool along with 5 Replacement Belts of each grit

The Finishing Kit includes:
1 Blue 240 Grit
1 Green 320 Grit
1 Yellow 400 Grit
1 Black 500 Grit
Grit tool along with 5 Replacement Belts of each grit

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<tr>
<th>Description</th>
<th>Part No.</th>
<th>Price per Sheet</th>
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<tr>
<td>Standard Kit, Coarser Grits</td>
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<td>Finishing Kit, Finer Grits</td>
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<td>80 Grit Belt- Replacements</td>
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Perma-Grit Tools are made of Tungsten Carbide Grit, one of the hardest elements available, second only to diamonds. They are specifically designed and developed for aircraft builders, woodworkers, and modelers. These tools will cut, sand and shape tough composite materials, saving homebuilders hours of building time. Ideal for fuselage shaping and wing building, these tools are highly recommended by several kit-plane manufacturers. Available in coarse (180) & fine (320) grit.

**PERMA-GRIT HAND TOOLS**

**SANDING BLOCKS & FLEXI-STRIPS**

These versatile sanding blocks are ideal for sanding large areas, creating straight edges, producing dihedral angles, profiling leading edges, feathering trailing edges, and more. The sanding blocks are coarse grit on one side and fine grit on the opposing side. The flexible grit strips can be cut and shaped to any form, external or internal.

**ROTARY FILES**

Supplied with a 3mm integral arbor so they may be used in reversible drive drills and hobby drills. These files are well balanced and run smoothly, and cut a wide range of materials with little need for secondary finishing. Available in coarse and fine grit.

**ROTARY CUTTING DISCS**

These durable cutting discs are available in two sizes (19mm and 32mm) and come complete with a 3mm steel arbor to fit hobby drills. Will cut all woods, piano wire, composites, ceramics, stone, etc.

**NEEDLE FILES**

These versatile tools are excellent for shaping and finishing. They will cut in any direction and do not clog easily. Our needle files cut quickly and leave an excellent finish. Very popular for detail work. Furnished in Medium 280 grit.

**HAND TOOLS**

Model No. Part No. Description Price
---
RF1C 12-00070 Narrow Cone coarse $13.75
RF1F 12-00071 Narrow Cone fine $13.65
RF2C 12-00072 Wide Cone Coarse $13.75
RF2F 12-00073 Wide Cone Fine $13.50
RF3C 12-00074 Drum Coarse $13.75
RF3F 12-00075 Drum Fine $13.75
RF4C 12-00076 Pancake Coarse $13.75
RF4F 12-00077 Pancake Fine $13.75
RF5C 12-00078 Domehead Coarse $13.75
RF5F 12-00079 Domehead Fine $13.75
RF6C 12-00080 1/8 diameter Rod Coarse $13.75
RF6F 12-00081 1/8 diameter Rod Fine $13.50

**3/8” INCH NEEDLE FILE KIT WITH HANDLE**

Set of 5 files: Hand, Round, Halfround, Square and 3-Square. Extremely versatile tools, popular for detailed work. These file cuts in any direction and does not clog easily. Cuts quickly leaving an excellent finish.

PN 12-00166 $4.35

**LARGE NEEDLE FILE HANDLE**

Comfortable plastic handle with brass collet to accept all large (18cms) needle files. Overall length 115mm. Collect 5mm.

PN 12-00166 $4.35

**MODELS & SPECIFICATIONS**

**FXT-102**

12-00066 560mm x 51mm Coarse one side, fine opp. $47.50
**FXT-103**

12-00067 19mm diameter disc with arbor $11.90

**FXT-104**

12-00068 32mm disc with arbor $12.95

**FXT-105**

12-00069 19 & 32mm disc with arbor $20.75

**FXT-106**

12-00070 Narrow Cone coarse $13.75

**FXT-107**

12-00071 Narrow Cone fine $13.65

**FXT-108**

12-00072 Wide Cone Coarse $13.75

**FXT-109**

12-00073 Wide Cone Fine $13.50

**FXT-110**

12-00074 Drum Coarse $13.75

**FXT-111**

12-00075 Drum Fine $13.75

**FXT-112**

12-00076 Pancake Coarse $13.75

**FXT-113**

12-00077 Pancake Fine $13.75

**FXT-114**

12-00078 Domehead Coarse $13.75

**FXT-115**

12-00079 Domehead Fine $13.75

**FXT-116**

12-00080 1/8 diameter Rod Coarse $13.75

**FXT-117**

12-00081 1/8 diameter Rod Fine $13.50

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RF6F 12-00081 1/8 diameter Rod Fine $13.50

Perma-Grit Tools come in a variety of grits and are designed for precision work. They are available in coarse (180) and fine (320) grit and are ideal for aircraft building, woodwork, and model making. The tools are made of Tungsten Carbide Grit, one of the hardest materials known, second only to diamonds. They can be used in drills or by hand and are highly recommended by kit-plane manufacturers.
**INVISIBLE GLOVES #1211**

Invisible Gloves #1211 are a soft paste-like substance that when applied to hands provides protection against caustic and carcinogenic chemical products including hydraulic fluid, paints, ink, MEK, zinc chromate, jet fuel, graphite, engine exhaust by-products, adhesives and much more. Invisible Gloves #1211 are easily removed with water. Allows complete freedom of hand and finger movement. Hands will not heat up and tools will not slip.

P/N 12-15800...................$7.95/pint

**GLOVES IN A BOTTLE**

Protect your hands with a protective skin lotion called Gloves in a Bottle. Perfect for homemakers, particularly those who work with composite aircraft, it binds with skin, forming an invisible pair of gloves to help protect against machinery and chemicals. It also protects against cracking and drying due to cold weather. 8 oz..................P/N 01-00656.................$15.65

**RAVEN GLOVES**


Medium ......................P/N 01-01402..................$13.75
Large .........................P/N 01-01403..................$14.95
X-Large .......................P/N 01-01404..................$14.95
XX-Large .....................P/N 01-01406..................$14.95

**THICKSTER GLOVES**


Medium ......................P/N 01-01394..................$14.95
Large .........................P/N 01-01395..................$14.95
X-Large .......................P/N 01-01396..................$14.95
XX-Large .....................P/N 01-01397..................$14.95

**SERIES 8 WASH-OFF HAND PROTECTION**

SERIES 8 - A less expensive “clone” of the famous PR88 hand crème developed in Europe, Series 8 is highly recommended by Rutan Aircraft Factory for working with epoxies. It protects hands from most epoxies, grease, oil paint, paste, gasoline, tar, lacquer, acetone, styrene, fiberglass and many more substances. It helps prevent chapping, cracking and drying of hands, and is an excellent aid to personal hand creme developed in Europe, Series 8 is highly recommended by Rutan Aircraft Factory for working with epoxies. It protects hands from most epoxies, grease, oil paint, paste, gasoline, tar, lacquer, acetone, styrene, fiberglass and many more substances. It helps prevent chapping, cracking and drying of hands, and is an excellent aid to personal butyl gloves.

P/N 01-01398..................$9.65

**PLY NO. 9 PROTECTIVE HAND GEL**

Provides a thin, invisible, flexible film which is an excellent barrier to epoxy resins, rubber adhesives, vinyl plasticizers, polyester resins and glass fibers. Epoxy and gel wash off easily in soap and water.

One-Lb. Jar ...................P/N 01-36100...............$8.50

**DENATURED ALCOHOL**

Can be mixed with soap and water. Is harmless to rubber. Use as a solvent for thinning, removing and cleaning epoxy, brushes, and equipment.

Gallon ......................P/N 01-00399...............$12.95

**REPLACETONE**

Cleans polyester and epoxy resins from tools and hands without the hazards associated with chemical cleaning solvents. It is a non-volatile, non-flammable and a biodegradable replacement for acetone and MEK solvents. Replacetone separates resins to the bottom of the cleaning container, but it does not dissolve them. Pour off non-emulsified Replacetone and use again.

Quart .......................P/N 01-08823...............$15.85
Gallon ......................P/N 01-08834...............$47.50

**LATEX GLOVES**

Disposable but re usable gloves which resist tearing. Large size. Fits right or left hand. Box of 100.

P/N 01-36550..................$10.85

**COTTON GLOVES**

Lightweight liners - wear under latex gloves. More comfort, improved sensitivity.

P/N 01-36600..................$0.95/Pair

**BUTYL GLOVES**

These gloves are resistant to the permeation of epoxy resins and curing agents and have been found to offer by far the best protection of any glove available.

P/N 01-36700..................$23.50

**TYVEK SUITS**

These are the tough, full-body suits with hoods that professional painters use. Available in extra large or extra extra large.

X-Large .......................P/N 01-36800.................$7.75
XX-Large .....................P/N 01-36805................$17.50

**MAXSHIELD DISPOSABLE PROTECTIVE CLOTHING**

FULL BODY COVERAGE: RECYCLED TYVEK® - Jump suit with Hood Covers. It’s the ultimate protection in a Tyvek® jumpsuit, covering you from head to toe with an integrated hood and elastic-topped shoe covers. If you work in an environment where it’s important to keep a barrier between you and microscopic particles, this is the Tyvek® jumpsuit for you.

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**THE TYVEK® SUIT** - The Lowest-Priced Recycled Coverall. You work with messy stuff... dirt, paint, solvents, chemicals, oil, grease. Protect your skin and clothing with an affordable barrier garment – the Tyvek® suit. These multipurpose suits are so durable you can wear them over and over. But they're priced so low, you can afford to throw them away when it’s time.

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**RECYCLED TYVEK® APRONS** - The Better-Than-Plastic Apron. A regular throw-away plastic apron might be good enough for small jobs. But for complete protection from food splashes, hot oil, dangerous chemicals, and other big problems, the serious professional chooses a Tyvek® apron.

Features: • Bib style for full protection. • 28" x 36" in size. • Serged seams for strength. • Long ties to customize the fit.

PN 12-01824..................$2.10

**TYVEK® DISPOSABLE SHOE COVERS** - Boot Covers

High top boot covers w/elastic top.

PN 12-01825..................$1.75

**TYVEK® DISPOSABLE** - Shoe Covers, Boot Covers With a Tyvek® disposable shoe covers you don't have to compromise. That's because Tyvek® disposable shoe covers deliver the best balance of protection, durability and comfort. Color: White.

PN 12-01995..................$1.39

**COMPOSITE SAFETY EQUIPMENT**

COMPOSITION: POLYETHYLENE

**INVISIBLE GLOVES**

P/N 01-36700

**LATEX GLOVES**

Disposable but re usable gloves which resist tearing. Large size. Fits right or left hand. Box of 100.

P/N 01-36550

**COTTON GLOVES**

Lightweight liners - wear under latex gloves. More comfort, improved sensitivity.

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