

# Fiberglassing Tubes with the GLR Easyglas™ Sock

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## Fiberglassing Tubes

You will probably find fiberglassed body tubes strong enough to endure motors with higher Average Thrust, harsher landings and most importantly, that unplanned event where the rocket body takes a hard hit for one of many unexpected reasons. After doing it once, you will likely never assemble another rocket without it!

Please read these instructions completely twice before actually starting...

### *Procedure for Glassing a Tube Using the GLR EasyGlas© Sock*

<b>Materials</b>	<ul style="list-style-type: none"> <li>(1) Giant Leap Rocketry EasyGlas© Sock</li> <li>(1) Giant Leap Rocketry Laminating Epoxy (Aeropoxy Light) (Plan approximately 1 ounce per coat / per 6 linear inches of 4.0 dia. tube. A 36" x 4.0 Dia. tube will use about 6 ounces of Aeropoxy.)</li> <li>(1) Roll of Masking Tape</li> <li>(1) Disposable Foam Finishing Roller (2" – 3" Long)</li> <li>(1) Disposable Plastic Roller Tray or Deep Plastic Plate</li> <li>(3) Pair of Vinyl or Butyl gloves (keep 2 or 3 extras nearby)</li> <li>(1) A fiberglassing rack made of a tube or rod with Centering Supports for the rocket body tube. Rack should be longer than the rocket body tube(s) by at least 8 inches. In the perfect world, also have a motor to slowly rotate the rod like a "rotisserie" as it dries.</li> <li>(1) Clothing iron or Ski-wax iron – NOT your family's good clothing iron!</li> <li>(1) Bright light for visibility and fan for air circulation</li> <li>(1) Warm air blower (Available from Vornado© and others)</li> <li>(2) End Tables, Saw-Horses or TV-Dinner Tables, etc. to hold the Body-Tube-Rack Assembly(s) level while you work.</li> <li>(1) Drop Cloth or Newspaper to cover floor under work area.</li> </ul>
<b>Step 1:</b>	Peel the laminate cover from the cardboard rocket body tubes. This will allow the cardboard to absorb more epoxy. If you don't do this, you must at least sand the surface of the cardboard body tubes heavily with 60 grit paper.
<b>Step 2:</b>	Install your tube mounting rack into the body tube. It is important that the support rings of the mounting rack <b><i>must not</i></b> sit under the fin slots.

	Now, stretch the EasyGlas© sock over the body tube, ensuring at least 8” extra on either side of the body tube.
<b>Step 3:</b>	Twist the sock at each end until it pulls tightly over the edges of the rocket body tube. Using tape, seal the ends of the Sock to the mounting rack by wrapping the tape around the sock <u>in the same direction as the sock is twisted</u> .  Wrap the tape down the rack, away from the rocket body tubes for a few inches to ensure that no epoxy gets on the mounting rack.
<b>Step 4:</b>	Using the iron on its LOWEST setting, iron any creases out of the EasyGlas© Sock. If they don’t come out, turn up the iron a little and try again.  Always keep the iron moving and slowly increase the heat until smoothing occurs. <b>DO NOT OVERHEAT</b> the sock by starting out at a high iron setting!
<b>Step 5:</b>	Mount the Fiberglassing Rack and tube on the supports for holding it in place. Ensure that a drop cloth or newspaper is covering the floor beneath the tube and a fan is blowing the air to ventilate the work area.
<b>Your sections of body tube should look something like this...</b>	
<b>Step 6:</b>	Lay out your extra gloves, paper towel, dowel, foam roller and rolling tray. Ensure you have everything within reach and adequate lighting and airflow. Put on your gloves and ensure your garbage bag is accessible.
<b>Step 7:</b>	Prepare your epoxy mixing cup by marking it on the side with a magic marker

	<p>at the “fill spots” related to your epoxy ratios. For example, Aeropoxy uses a 3:1 ratio, so you would mark fill-lines on the cup side at 1-oz. and at 4-oz.</p> <p>For a 36” x 4.0 tube, mix about 6 ounces of epoxy (for this, mark the cup at 1.5 oz. and at 6 oz.)</p>
<b>Step 8:</b>	<p>Starting from one end of the tube, roll the epoxy into the EasyGlas Sock©, covering one strip from end to end. Note that the fiberglass absorbs a lot of epoxy. As the fiberglass becomes wet it gets translucent – almost transparent.</p>
<b>Step 9:</b>	<p>Rotate the body tube partially and repeat the process until the complete tube is covered. Turn the tube for a couple of rotations while rolling out the epoxy to spread it evenly and completely across the surface of the tube.</p>
<b>Step 10:</b>	<p>Turn on the heating fan to speed curing of the Aeropoxy. This is strongly recommended for curing in a reasonable time. From experience, Bob Smith epoxy WILL NOT CURE below 70° F.</p>
<b>Step 11:</b>	<p>If you don’t have automated equipment, rotate tube ¼ turn every 10 minutes for the first 60 – 90 minutes. Otherwise, use the “rotisserie” to rotate the tube. It’s worth the effort to turn it every ten minutes if you’re “going manual”..</p> <p>If you don’t rotate the tube, the epoxy will collect at the bottom and will be too thin at the top. The epoxy will need about 3 hours to fully cure.</p>
<p><b>After epoxy is applied, this is how the sock appears.</b></p> <p><b>Notice that the white laminate coating has been peeled from the cardboard body tube under the fiberglass</b></p>	

<b>Step 12:</b>	<p>Proper finish is when a slightly rough surface created by the glassing fabric can be seen. If you cover the glassing fabric with a “sheen” layer of epoxy, you may experience cracking in the surface later on.</p> <p>After the epoxy has fully cured, sand with 100- 150 grit sandpaper with a finishing sander. Work in an open space that can handle lots of fine dust and <u>wear a dust mask!</u> (Outdoors is recommended!)</p>
<b>Note on two fiberglass layers:</b>	<p>We have not done this procedure with two layers of fiberglass sock. However, if you’re planning to use a second fiberglass sock, three things:</p> <ol style="list-style-type: none"> <li>1. DO NOT underestimate the added level of complexity this brings with it. You may find that the first layer of fiberglass will crease, buckle or bubble as you manipulate the wet assembly.</li> </ol> <p>Also, this adds weight to the final rocket, and in our experience (4 rockets and over 20 flights), one layer of fiberglass is sufficient for most applications.</p> <p>Net, net, for your first attempt, it is <u>strongly</u> recommended that you use only one layer of fiberglass.</p> <ol style="list-style-type: none"> <li>2. You must prepare / iron the second sock before starting. Try putting it on the body tube, ironing it and then taking it off and setting it aside.</li> <li>3. You should put the second sock on while the first one is still wet.</li> </ol>
<b>Step 13:</b>	<p>Using a Dremel© tool with the diamond cutting blade or saw blade, cut through the epoxy /glass at the ends of the tube. Then, use a Dremel© with the Grout Cutter attachment to grind the cured glass out of the fin-slots. Then, sand, file or grind the fin-slot and body tube edges smooth.</p>
<b>Step 14:</b>	<p>You are now ready to assemble your rocket.</p> <p>See our Fiberglassing Fins instructions for post-assembly fiberglassing. You will find that for most supersonic flight, fiberglassing fins is necessary.</p>

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