



HIGH TEMPERATURE LAMINATING PROCEDURES FOR AUTOCLAVE TOOLING



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LAMINATING PROCEDURES SUGGESTED BY TOOLING ENGINEERS FOR THE FABRICATION OF HIGH TEMPERATURE EPOXY AUTOCLAVE TOOLING

1. After the pattern/model has been prepared with an appropriate sealer and/or mold release, catalyze Adtech ES-215 Epoxy Surface Coat and apply to the pattern or model at a thickness of 0.025" to 0.030" (**do not exceed 0.030" thickness**). Apply using a natural bristle brush (trim bristles to ½" length to stiffen brush action) or spatula.
2. When ES-215 reaches a tack-stage, be prepared to immediately apply a catalyzed coating of Adtech EL-315-IHL Laminating Resin and begin to laminate using 4 - 5 plies Style #7500 10oz fiberglass cloth. The application of dry cloth onto a pre-wet surface with a stipple brush or spatula will allow the laminating resin to flow up through the cloth, pushing air out ahead of it.
 - The fabric should be cut into squares of 12" x 12" or 24" x 24" depending on complexity of the pattern.
 - Cloth edges should be placed tightly together. Do not overlap.
 - Ideally, resin to fabric weight should be as close as possible to 50/50.
 - Use the industry standard for the method of ply orientation.

Note: When using ES-215-IHG long work life hardener version it is recommended to allow gel coat to reach full tack stage which may require up to 10-12 hours at room temperature before applying first laminate. However, do not allow surface coat to cure to a tack free condition (non-sticky) before application of first laminate.
3. Apply peel ply to last laminate, prior to vacuum bagging materials. Removing peel ply will scarify and maximize bonding surface before laminating is resumed.
4. Vacuum bag after this step, prior to gelling of laminating resin (refer to work life information provided on product data bulletins), maintaining a minimum 20 inches of mercury vacuum. The laminate should remain under vacuum for a duration equivalent to 2 - 3 times resin work life prior to removal of vacuum bag and peel ply.
5. Remove the bag carefully without disturbing the laminate. Tip: Remove the vacuum hose and replace it with a compressed air hose. Feed in a small amount of compressed air. This will balloon the bag away from the laminate. Carefully remove the bleeder and perforated film (peel ply).
6. Continue laminate construction and ply orientation.
 - Debulk after every twelve (12) layers (or within the flow time of resin used) for 30-60 minutes to sweep out any entrapped air maintaining 20 inches of mercury vacuum.
 - Repeat as necessary.
7. Final debulk is for 12 hours at room temperature maintaining 20 inches of mercury vacuum.
8. Preliminary Cure: Follow instruction on the Data Sheet for the specific laminating resin.
9. Attach support structure.

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10. Post Cure: Follow instructions on Product Data Bulletins for the specific laminating resin selected.

The heating rate should not exceed 13°C/25°F per hour. The cooling rate should not exceed 27°C/50°F per hour. Remove from the oven when the tool reaches a temperature of 38°C/100°F or less.

PLEASE REFERENCE PRODUCT DATA BULLETINS

SURFACE COAT: ES-215 SERIES

LAMINATING RESIN: EL-315 SERIES

SURFACE REPAIR SYSTEM: ESG-215 SERIES / P-17 HIGH HEAT FILLER

RELEASE AGENTS: MOLD SEALER MR #7 / MOLD RELEASE MR #10

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