

SPECIALTY MATERIALS, INC.

Manufacturers of Boron and SCS Silicon Carbide Fibers and Boron Nanopowder

FABRICATION AND CURE OF 4 MIL BORON/EPOXY LAMINATE WITH 5505 RESIN

Laminate Lay-up:

1. Cut required lengths of tape.
2. Lay up panels on right angle plate, match opposite ends of tape.
3. Spray RAM 225 over mold release on caul plate, spray with steady even strokes. Let dry for a few minutes before proceeding.
4. Make right angle border on caul plate using 1/2" borders with 1/8" thick corprene, making sure edges are straight. This forms the dam.
5. Butt panel, scrim side down, lightly against the dam and then enclose other two sides by lightly butting corprene against panel and pressing down to stick to plate. Make sure all burrs are covered with cork.
6. Cut porous Teflon to cover panel and apply to panel by pressing lightly and smoothing out.
7. Cut bleeder cloth 112 fiberglass (1 ply for every 3 plies of panel) and cover panel evenly. Tape in place with Scotch tape.
8. Cover entire plate with Mylar or Tedlar. Tape in place with Scotch tape. Place small "L" shaped slits in four corners of each panel.
9. Clean off base plate and put sealant along edges (zinc chromate). Make sure all seams butt tightly.
10. Put prepared caul plate onto base plate making sure no fibers cross sealant, as this would cause a vacuum leak.
Note: Area with extra space on caul plate is placed toward vacuum hole on base plate.
11. Cover entire panel with 1581 glass cloth and tape in place.
12. Remove sealant cover and cover entire assembly with Capron 80 making sure that there are no holes or wrinkles and that a good seal is made--leave the corner over the vacuum port unsealed--make a bridge of 1581 cloth and cover vacuum port. Seal the bag and tape excess capron under the base plate with glass tape.

Cure Cycle (5505 Resin):

1. Place bagged laminate in autoclave and connect vacuum line to port on base plate
2. Pull a full vacuum
3. Apply 50 – 85 psi air pressure
4. Heat up to 250°F (4-6°F/minimum)
5. At 235°F dump vacuum
6. Continue heating up to 350°F and hold at this temperature 90 minutes
7. Cool to room temperature taking approximately 30 minutes
8. Remove panels and clean them
9. To improve laminate mechanical properties at temperatures above 300°F, a post cure of 2-4 hours at 375°F is recommended
10. Machine appropriate specimens

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EXAMPLE LAMINATE:

15-PLY FLEX PANEL, 3" X 12", 4 MIL BORON

