pfRICH Sensor Plate Prototype

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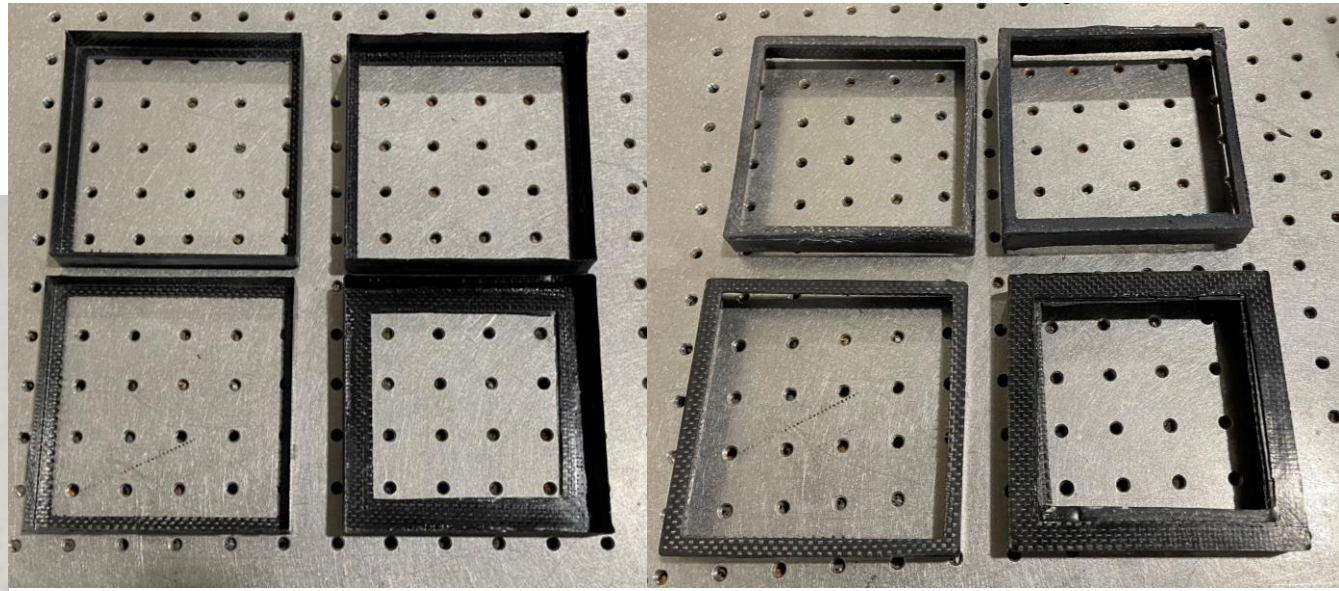
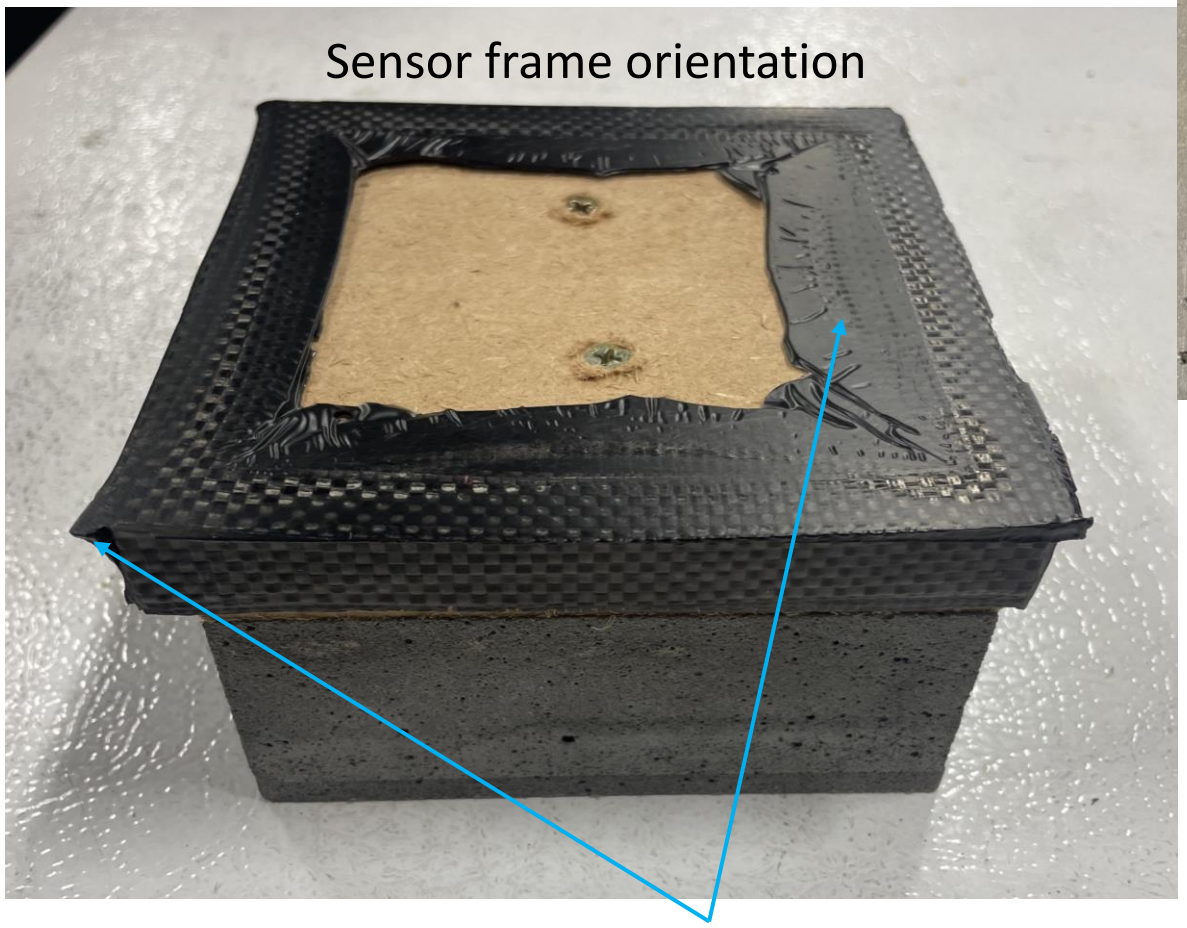
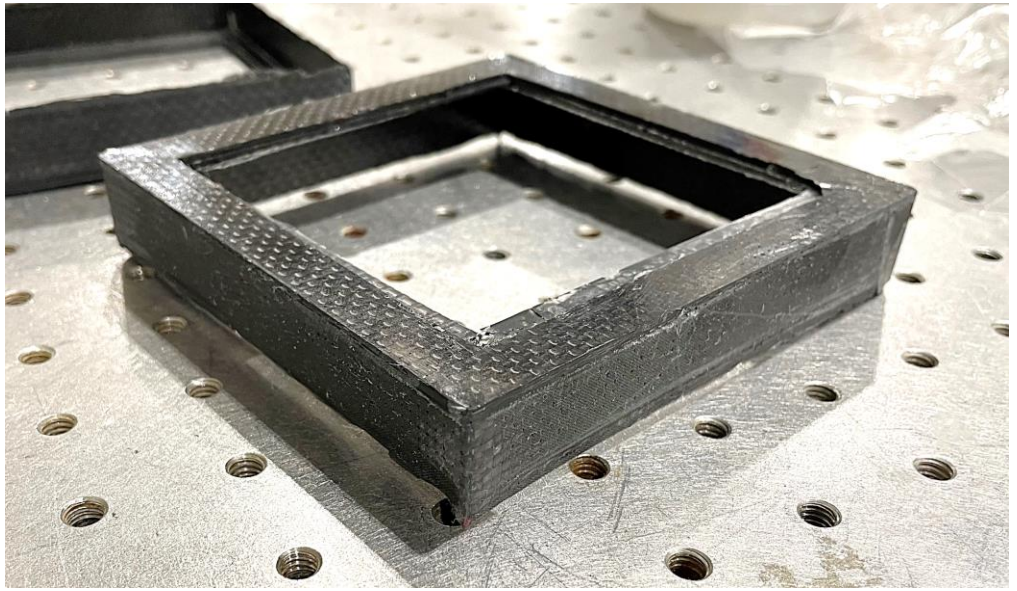
Sensor Frame Trimming

Sensor frames before and after inner edge trimming. Sides still need to be trimmed to height



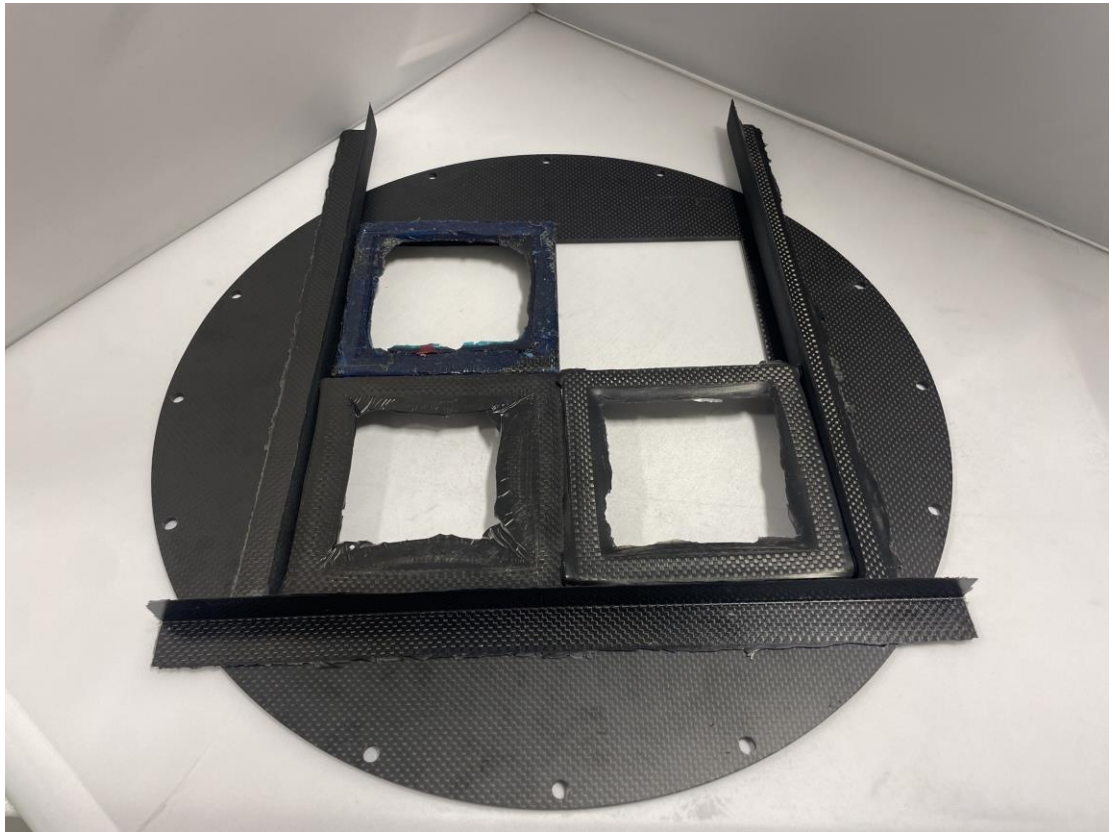


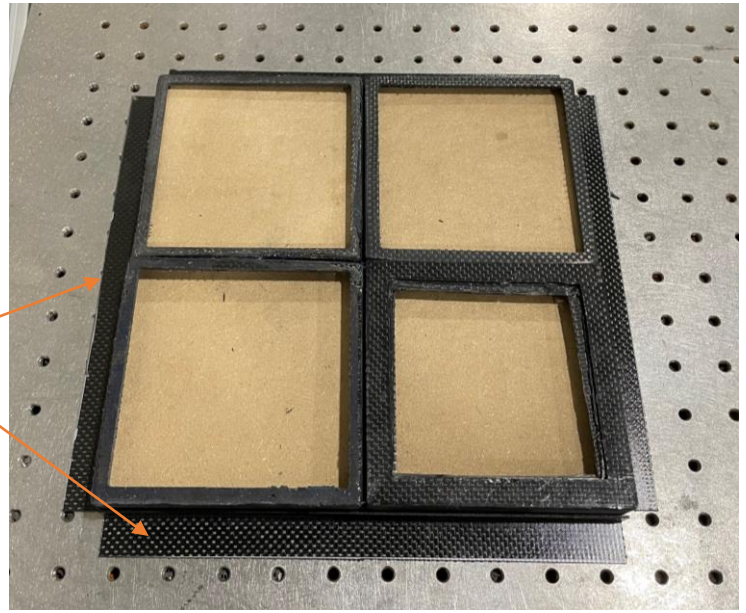


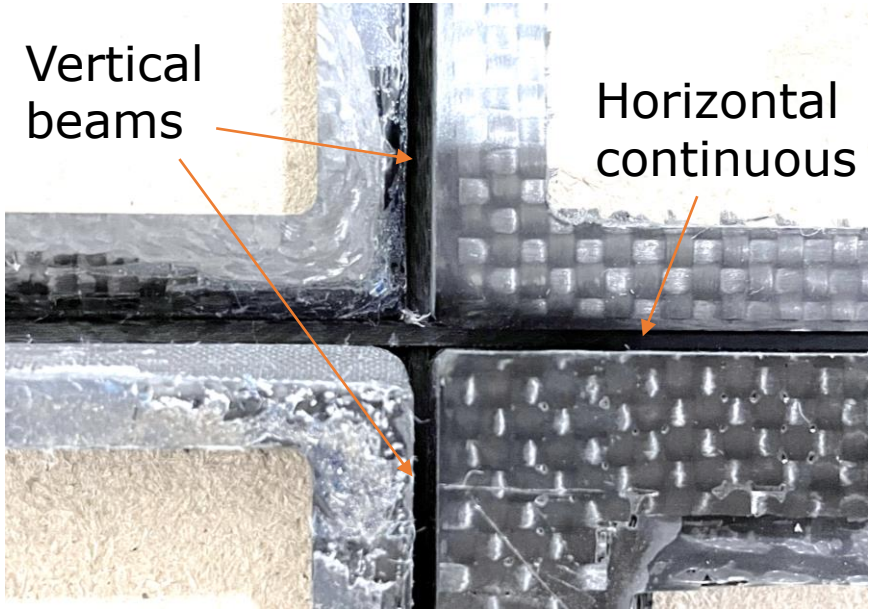
Sanded outer edge

Sensor Frame Bonding

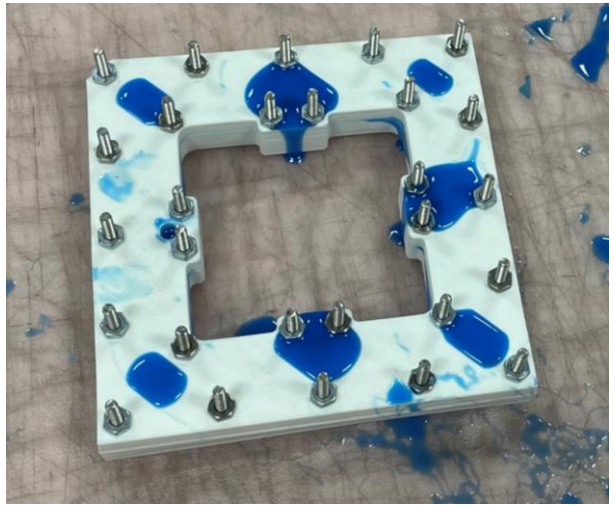
- All parts for prototype bonding are made
- Will finish trimming sensor frames and bond this week
- Full-sized sensor plate production has begun

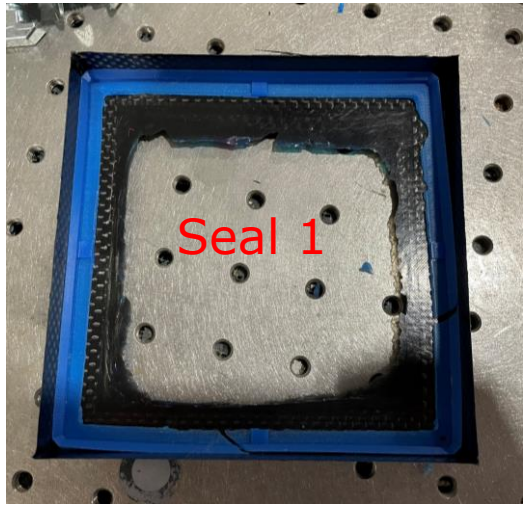




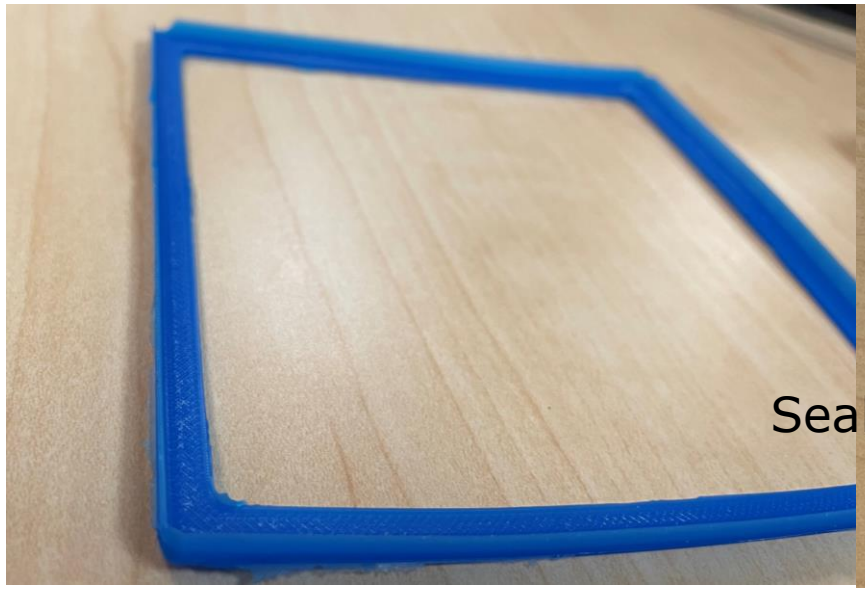


Seal Results

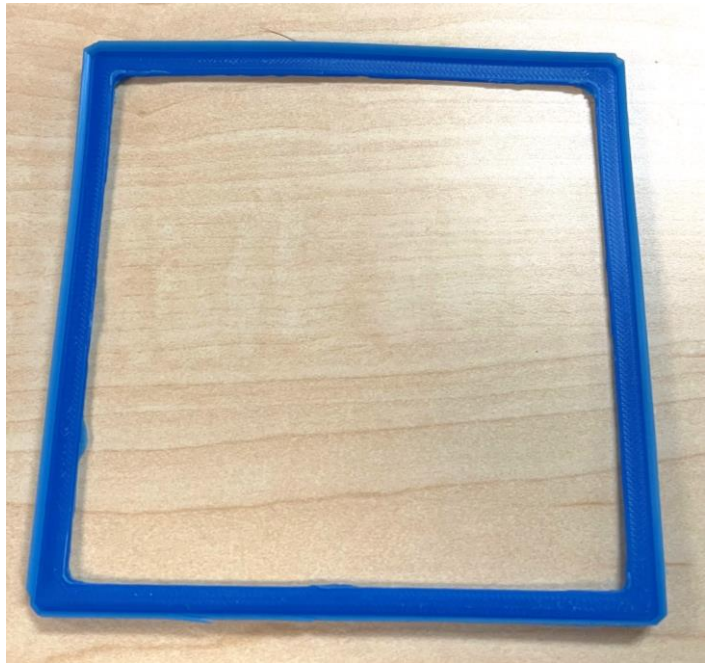




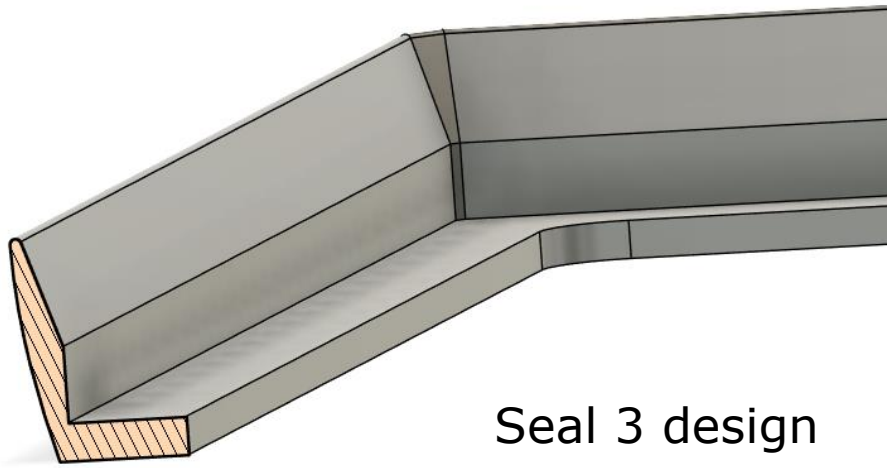
- First seal design tore during demold
- Thinned walls in second design to improve fit
- Thickened bottom and degassed before molding to prevent tearing
- Achieved thinner walls on seal 3, but not enough tension to grip sensor



Seal next steps



- Silicone didn’t tear through insertion cycles
- Fit is difficult and inconsistent around the sensor
- Fourth design with thinner walls and tighter fit around sensor is in progress
- Need to reprint mold for smaller footprint



Seal 3 design

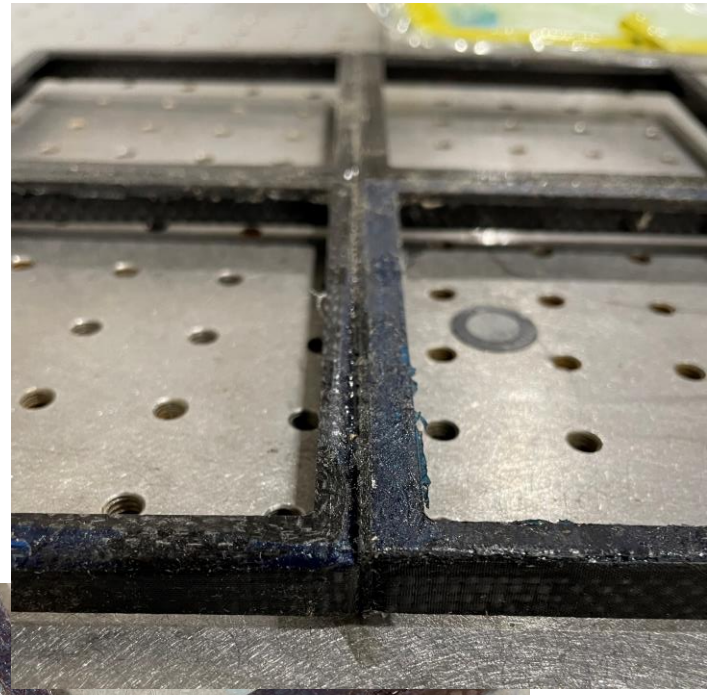
Trouble with seal fitting all the way around

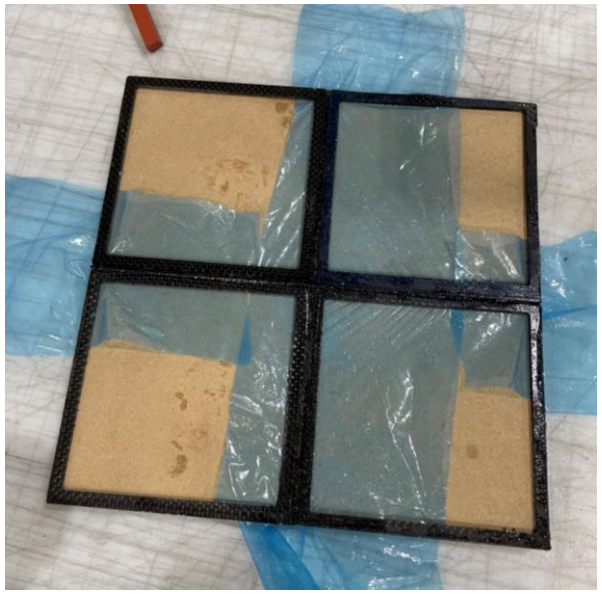
Sensor frame machining

Pictures before and after machining of top face
MDF tool used for small scale prototype
Tooling board machining tool will be used for final plate to get more accurate dimensions

Sensor Frame Bonding

- Trimmed sensor frames bonded on MDF alignment tool
- Will bond L brackets and outer plate this week
- Initial measurements are within 0.5 mm of intended dimensions
- More metrology still to be done



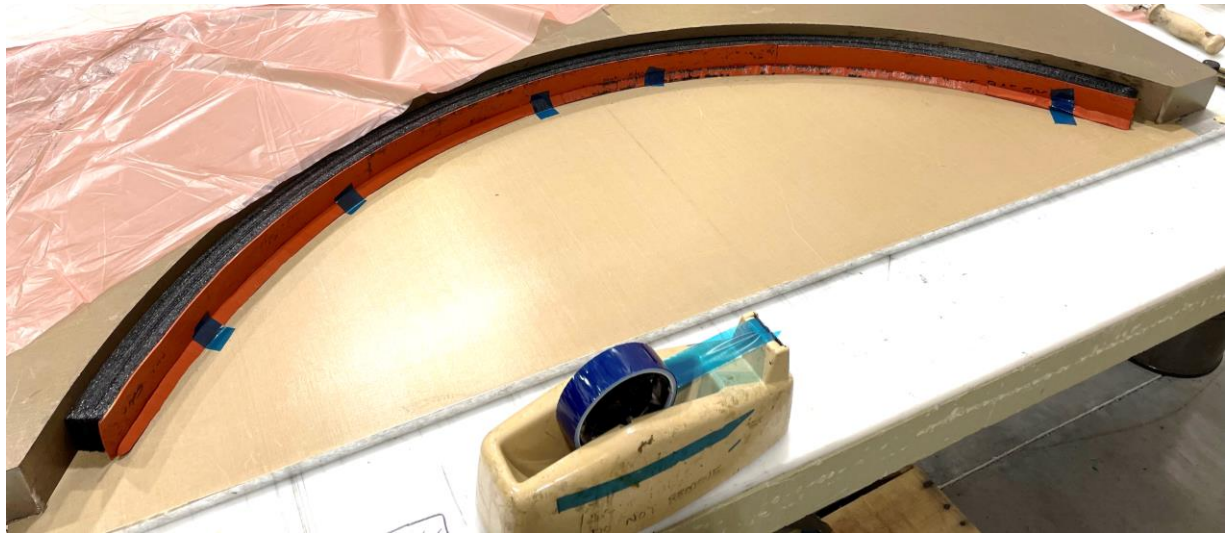


Sealing

- Continuing with 3rd iteration of Seal
- Seal was made smaller and tapered to provide a tighter fit around HRPPD
- Will demold and test later today

New End Ring

- Layups for a new pfRICH end ring are underway
- Replacing end ring with out of spec insert locations
- Instead of bonding all quarters post machining, will machine bonding features, bond into full ring, then trim and machine holes for inserts
- Layup procedure remains the same



3 quarters cured – 4th quarter in manufacturing right now

Test – 2 inch from end ring

- For end 2 inch test piece
  - CFRP face sheets are curing today will be shipped to SBU by Monday
- Pressure tests for different lexan co-bonds planned