

Insert and Glue Straws into Frame

GlueX-doc: 1625
Modified 13 Oct. 2010

General Procedures: Mix the epoxy according to procedures (GlueX-doc 1622). All procedures are carried out in the clean room. Standard clean-room procedures apply. Prior to this step, the straws have been checked (GlueX-doc 1532) and cut to length and cleaned (GlueX-doc 1624). Prior to this step donuts have been checked and cleaned (GlueX-doc-1533). Straws were cut to length and cleaned (GlueX-doc-1624) and donuts were glued in (GlueX-doc-1623) The aluminum parts are glued with the 920-H conducting epoxy and the plastic parts with the DP-190 epoxy.

Training Procedures: New personnel will watch a trained person carry out this procedure. They will then repeat the procedure under supervision. Given the small number of people allowed in the clean room, no written records of this training are maintained. We expect very few people to be trained in this procedure.

Caution: The conducting epoxy is expensive so make sure that more tubes than can be glued are ready to glue. We estimate about 30 tubes per 10-gram bipack of epoxy.

Caveat: This procedure is still under development to optimize construction.

This procedure requires two or three people to carry it out. One person will be on the upper deck of the scaffold. The second person will be seated below the chamber. If a third person is not involved, the second person will also select straws.

For the first straw in a layer, the number one hole needs to be located and marked with green tape on both the top and bottom of the chamber.

A straw is slid between the end plates and aligned with the holes. The feed thru's are then dry fitted to hold the tube in place. The lower (aluminum) feed through is taped into place. If the plastic feed through is tight, then an aluminum donut is used at this point.

The straw is rotated in place to make sure it is aligned.

This is repeated until twenty straws are in the chamber.

Both conducting epoxy (at the lower station) and regular epoxy (at the upper station) should be mixed and in syringes.

Remove the feed thru and brush the appropriate epoxy on the outside of it, then reinsert into the straw. This is done for all the straws in the current batch. For the ones on the bottom, re tape after this step.

Inject the appropriate epoxy into the glue ports of the feed thrus until it just comes out the other port. The same procedures are used for this injection as for the donuts.

For the bottom feed thrus, cover the ports with green tape.

After the tubes have cured for 24 hours, the green tape is removed.

After the straws have been glued in, repeat the procedure for a second group of straws.

After completion of this for a given day, the top of the upper endplate needs to be covered to prevent dust from settling in the straws.

After completion of an entire layer of straws, the straws are spot-glued together along their length using glue.

The procedure for stereo layers differs slightly from the previous procedure.

Before starting, the chamber is tilted to the predetermined angle for the given stereo layer.

Depending on the stereo angle, the scaffolding may need to be moved to the opposite side of the chamber.

The straw is inserted roughly vertical.

The chamber is rotated to keep the insertion point roughly at vertical.

After completion of a stereo layer, the straws are spot glued together at their centers where they touch.