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LAMEL-GLASS-ADHESIVE TESTS

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Because we experienced some instances of lamels partly delaminating from the glass carrier plates we did some tests to see if we could improve the adhesion of the lamels to the glass surface.

The glass plates are currently available with a smooth finish and with a lightly frosted finish. No one here seems to know how the frosted finish was produced. All lamels have so far been glued on plates with the frosted finish. The epoxy used for gluing was Devcon 2 Ton epoxy, a general purpose epoxy.

We tested three types of epoxy and three surface finishes on the glass. The epoxies we tested were Devcon 2 Ton epoxy, Bicron BC-600 Optical Cement, and Ciba-Geigy Araldite AW106/HV953. We tested the epoxies on sections of a glass carrier plate that were smooth, lightly frosted and sand blasted in the detector facility. Lamel samples were sanded with #120 sandpaper, and the lamels and glass plates were cleaned with isopropyl alchohol before gluing. Lamels and glass plates were clamped together by placing weights on them while the glue was drying. The test was qualitative rather than quantitative in that we simply judged how hard it was to manually peel the lamel off the glass substrate, but we did not use an instrument to actually measure the force.

In order of surface quality affecting adhesion we found:

smooth	worst
frosted	better
sand blasted	best

In order of adhesion we found:

2 Ton	worst
Araldite	better
Optical Cement	about the same as Araldite

We do not intend to use optical cement or Araldite to glue the lamels to the glass plates but we tested them to see how 2 Ton compared to other epoxies we typically use. Unfortunately optical cement us too runny for general use and Araldite is slightly conductive which makes it unsuitable for gluing the lamels.

In conclusion, 2 Ton epoxy on smooth or frosted glass is not adequate. There is some danger of delamination. However 2 Ton epoxy on a sand blasted glass surface does have adequate adhesion.