

Material Qualification Queue

as of 1 Nov-2010
in priority order

1. Red First Contact
in an optical cavity now
optical cavity results in [E1000294-v1](#)
RGA testing results in hand - to be filed soon
2. Masterbond low outgassing epoxy (EP30-2): repeat RGA and optical contamination cavity testing with epoxy bonded between 1" glass slides (~.001 thick)
As always, take extreme care in proper mixing ratios. Bond 10 pairs of glass disks of 1" diameter together to obtain 10 bonds each 1" diameter and ~.001" thick.

Measure the pair thicknesses before and after epoxying to gauge the bond thickness. You could get glass windows from Edmunds:

<http://www.edmundoptics.com/onlinecatalog/displayproduct.cfm?productID=1755&PageNum=2&StartRow=21>

The NT45-640 is an uncoated 25mm diam disc.

According to Master Bond reps, the best cure schedule (yielding the strongest bonds) is: overnight (say 12 hr) room temperature cure, followed by a heat cure of 3 hours at 150 deg. F. See the data sheet for the EP30-2 in the dcc:

<https://dcc.ligo.org/cgi-bin/private/DocDB/ShowDocument?docid=15100>

3. Perkin Elmer 3mm InGaAs Photodiode, Part Number - C30665GH
Intended Use - aLIGO DC readout detectors (ISC)
Quantity - 10
Purchase Order Number - CP748923
Max Storage Temperature (from data sheet) - 125 C
 1. Clean exterior of diodes
 2. Cut can lids off with clean cutting tool (Chub has tool)
 3. Bake at 120 C
 4. Perform RGA scan
 5. Perform Cavity Contamination Scan
4. a) RTD device (Omega #1PT100KN1510CL1/3)
for TCS temperature measurement
platinum wire wound
embedded in alumina?

- b) Fiberglass insulated RTD extension cable (Omega # PN EXGG-4CU-26S) for TCS temperature measurement
5. EG&G YAG-444A -- the proposed diodes for the arm cavity baffle
 6. Microtech Inc., ultraminiature high reliability connectors for the ICS pico-motors
 7. Nedox SF-2 coating (by General Magnaplate) Coating Material for TCS in-vacuum relay mirror (will be applied to the I.D. and O.D. surfaces of a .50" tube) There will be six specimens, each 16" long for testing
 8. Ferrite Material
Rich Abbott needs to provide a significant number of samples (10 - 20 units) from a known source with a known material grade.
Ferrite materials are based on "Nickel-Zinc" and "Manganese-Zinc". Zinc has a high vapor pressure.
One possibility is BN-43-7051 is a Balun (binocular or multi-aperture) core sold by many companies, such as Amidon Corp.:
<https://www.amidoncorp.com/specs/2-34.pdf>
where "43" refers to the material.
Material 43 is a NiZn ferrite material:
http://www.cwsbytemark.com/CatalogSheets/Ferrite_datasheet_oct06/FR_MATL.pdf
<http://www.fair-rite.com/newfair/materials43.htm>
 9. Copper & polyimide clad fiber optic, IVG Fiber CU1300. Brian Lantz wants to test this material for use with an optics table, optical lever system. Could be used for ALS etc. Likely "inherently" vacuum compatible, but worth checking since it has a polymer.
 10. Nedox solid lubricant (for potential BSC-ISI tooling use (class b) but perhaps useful in vacuum as well) (had small sample -- likely inadequate in size)
 11. Tungsten carbide/carbon (WC/C) sample (for potential BSC-ISI tooling use (class b) but perhaps useful in vacuum as well) (had small sample -- likely inadequate in size probably inherently vacuum compatible)
 12. Cesium sample (composite ceramic of SiC, Si and C) possibly inherently vacuum compatible application is not clear (high stiffness to weight structure) (sample size adequate?)