Lawrence Berkeley National Laboratory University of California	Code	**SPECIFICATION**	Serial **M936**	Page 1 Of 1
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Title **KamLAND LED Wire Preparation**				

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Read all instructions, including manufacturers warnings completely before proceeding

a) Cut the end of the cable square if required.
b) Sand the outer jacket of the cable with 180 grit abrasive cloth. Sand from within 1 inch of the cable end to about 5 inches from the cable end. Work the crevices in the jacket first, then the rest of the jacket. Remove only enough material to roughen the surface and remove the shine. It is very easy to sand a hole in the jacket, so be careful.
c) Strip the last two inches of the outer sheath off and carefully remove the shielding from the wire pairs.
d) Sand the insulation on the individual strands with 320 grit abrasive paper. This insulation is thin, so remove only enough material to dull the shine.
e) Scrub all insulation with acetone and put the wire in a 110 deg C drying oven for 20 minutes minimum.
f) Heat Acton Fluoroetch **[1]** etchant to 60 - 70 deg C in its original container. Be very careful to avoid exploding the container due to heating of a closed volume. Note that Fluoroetch is very active and will be deactivated by water, oxygen, organic solvents and just about anything else. Polyethylene is the container material of choice. **Follow all storage, use and disposal instructions provided by Acton.**
g) All etching must be done in a glove box or gas-shielded bath. The Fluoroetch **must** be kept above 50 deg C and the wires should be etched immediately upon removal from the oven. Do not apply the etchant such that it can capillary inside any of the insulation. Putting a bend in the individual wires allows the center of the length of wire to be etched without etchant running into the wire ends or inside the jacket. The individual wires should have a very light brown-black cast and the outer jacket a brown-back color if properly etched. Unetched areas should be lightly sanded and the process repeated from step e. The etchant must be green-black in color. Do not attempt to use depleted etchant, as you will have to return to step e if the insulation is exposed to inactive solution. We were unable to find satisfactory application tools, so we used acid brushes. If you don't have an inert application tool, do not leave it in contact with active solution. Set it in a poly container when not in use.
h) Rinse and lightly wipe down etched wires with the cut ends facing down. Do not handle etched surfaces with bare hands to preserve cleanliness.
i) The parts are ready for circuit board installation.

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[1] Acton Technologies, Pittston, PA, (570) 654-0612, www.actontech.com/fluor5.htm