



**Quotation**  
**August 17, 2004**

ITEM 1 Through-thickness tensile/adhesion tests between copper and CTD-101K

CTD shall fabricate 16 through-thickness tensile test specimens, composed of copper end pieces bonded to CTD-101K/S-2 Glass composite insulation, and test these specimens at 77 K.

Specimen Design

Specimens will consist of a 0.050-inch thick composite layer of CTD-101K reinforced with S-2 Glass, 6781 style woven fabric, sandwiched between two copper end pieces, each 0.5-inch in diameter and approximately 1.2 inches long.

Specimen Fabrication

Specimens will be fabricated by loading the copper end pieces and dry S-2 Glass fabric into a closed mold, and impregnating the fabric using standard Vacuum Pressure Impregnation (VPI) processing procedures with CTD-101K epoxy resin. A single production run will be conducted, producing 16 specimens. Variations in the copper bonding surface preparation can be evaluated at PPPL's direction.

Specimen Testing

The specimens will be tested in tensile mode at 77 K, thus measuring the ultimate tensile strength in the "33" or through-thickness direction.

Deliverables

A final report will be submitted, detailing all specimen production and testing procedures, along with the measured ultimate tensile strength and failure modes.

Firm-Fixed-Price:     \$4,465.00