Alpha Resources, Inc.
Certificate Of Analysis

AR 149
COPPER PIN STANDARD
OXYGEN & SULFUR
LOT # 534985510

PPM OXYGEN(ug/g)	PPM SULFUR (ug/g)
MEAN = 323 PPM	MEAN = 11 PPM
ONE SIGMA = +/- 8 PPM	ONE SIGMA = +/- 3
TWO SIGMA = +/- 16 PPM	TWO SIGMA = +/- 6
RANGE = 307 to 339 PPM	RANGE = 5 to 17 PPM

PPM CARBON = 15 +/-6 PPM (REFERENCE ONLY)
PPM NITROGEN = 3 PPM (REFERENCE ONLY)

Oxygen	Inert Gas Fusion IR Detection
Sulfur	Combustion - IR Detection
Carbon	Combustion – IR Detection
Nitrogen	Inert Gas Fusion TC Detection

Standard Reference Materials employed:

NIST	1034, C1253
BAM	379/3, 379/2
INMF	Cu300, Cu-S20
JSS	1201-1
BCS	260/4

Notes:

The mean analytical values were derived by a number of data sets (n=40). The precision values represent the standard deviation, two times the standard deviation (k=2, 95%confidence), and complete range of analysis. When necessary, professional judgment is applied toward consideration of data and statistical information. The statistical analysis and the overall direction and coordination of the analytical measurements leading to certification were performed by K.E. Dyer, Technical Manager at Alpha Resources.

The methodology follows ASTM E1019-08, ARI 033, and ARI 034. The material used in production of this standard was sampled in accordance with ARI 032. The samples for analytical testing were selected in accordance with ARI 014. The above values relate only to the material used to produce this standard. This standard consists of 100/1g pins and has no expiration date.

Remedies for any claimed defect in this product will be limited to product replacement or refund of the purchase price. In no event shall Alpha Resources be liable for incidental or consequential damages.

This is a Certified Reference Material (CRM), and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

This standard was produced in accordance to Guide 34. Alpha Resources has become accredited under the ISO Guide 34:2009 for RMP and holds a ISO 17025 accreditation. Refer to certificate and scope of accreditation for details.

Certified December 2, 2010

Kent Dyer - Technical Manager