

Alpha Resources, Inc. Certificate Of Analysis

AR 149
COPPER PIN STANDARD
OXYGEN & SULFUR
LOT # 534985898

PPM OXYGEN
MEAN = 310 PPM
ONE SIGMA = +/- 2 PPM
TWO SIGMA = +/- 4 PPM
RANGE = 305 – 314 PPM

PPM SULFUR
MEAN = 10 PPM
ONE SIGMA = +/- 3
TWO SIGMA = +/- 6
RANGE = 5 – 15 PPM

PPM CARBON = 15 PPM (REFERENCE ONLY)
PPM NITROGEN = 2 PPM (REFERENCE ONLY)

Methods of Analysis

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

Standard Reference Materials employed were
NIST SRM 394, 343a, 131c, 396, BCR SRM 58

Notes:

The mean analytical values were derived by a number of data sets obtained by the above methods.

The precision value is based on the standard deviation, two times the standard deviation, and complete range of analysis obtained by the data sets. Carbon and Nitrogen given for reference only.

The statistical analysis of the certification was performed by K.E. Dyer at Alpha Resources.

The overall direction and coordination of the analytical measurements leading to certification were performed by K.E. Dyer at Alpha Resources.

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.

Certified November, 1998



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