

# Alpha Resources, Inc.

## Certificate Of Analysis

KED-1025  
OXYGEN AND NITROGEN IN IRON POWDER  
LOT # 1212C

**% OXYGEN**  
MEAN = 0.90  
One Sigma Standard Deviation = 0.03  
Expanded Uncertainty = 0.07  
(k=2.3, 95% confidence)

**% NITROGEN**  
MEAN = 0.012  
One Sigma Standard Deviation = 0.0015  
Expanded Uncertainty = 0.0030  
(k=2, 95% confidence)

This data was reported using inert gas graphite fusion with thermal conductivity and infrared detection. Micro sample size of about 50-300mg may need to be considered. Additional use of high purity graphite powder was also used.

Standards Employed for traceability:

JK 47

### Notes:

The mean analytical values were derived by 9 data sets (n=90) showing traceability to the above mentioned NMI and reported in mass fraction. The precision values represent the estimated uncertainty derived from analysis and may not represent your testing capabilities. Refer to your test method for the expanded method derived uncertainty if needed. 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.

There were limited primary standards of this type of matrix available at the time of certification. This bottle contains 50g of fine powder to be used directly from the bottle without preparation, and has an indefinite shelf life. Keep sealed and store under normal laboratory conditions.

The material used in production of this standard was sampled in accordance with ARI 032. The samples for round robin testing were selected in accordance with ARI 014. The above values relate only to the material used to produce this standard.

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 (Working Standard), and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

Certified September 26, 2013



Technical Manager