

# Alpha Resources, Inc.

## Certificate Of Analysis

AR 641  
TITANIUM STANDARD  
LOT # 211B

**% OXYGEN**  
MEAN = 0.1910  
One Sigma Standard Deviation = +/- 0.0034  
Expanded Uncertainty = +/- 0.0068  
(k=2, 95% confidence)

**% NITROGEN**  
MEAN = 0.0354  
One Sigma Standard Deviation = +/- 0.0040  
Expanded Uncertainty = +/- 0.0080  
(k=2, 95% confidence)

**% HYDROGEN**  
MEAN = 0.0039  
One Sigma Standard Deviation = +/- 0.0005  
Expanded Uncertainty = +/- 0.0010  
(k=2, 95% confidence)

Method of Analysis is ASTM E 1409-08, E 1447-09, E 1937-04, VHE, ARI 034, and ARI 036

Primary (NMI) Standards used for traceability:

NIST SRM	2452, 2453, 173b, 173c, 173
NCS	NS57103, NS57104, NS57003
BCR CRM	276, 24

#### Notes

The mean analytical values were derived by 6 data sets (n=60) showing traceability to the above mentioned NMI standards, and reported in mass fraction. The precision values represent the estimated uncertainty derived from the data sets 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.

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. This bottle consists of 10g material in .1g pins and is to be used directly from the bottle, with no preparation needed. Multiple pins may be used per test method requirements. This product has an indefinite shelf life.

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 calibration standard is accredited and meets the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation board. Alpha Resources is an ISO/IEC 17025 accredited laboratory. For more information concerning our scope of accreditation contact Alpha Resources.

Certified August 16, 2011



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