Alpha Resources, Inc.
Certificate Of Analysis

AR 647
TITANIUM STANDARD
LOT # 212B

% OXYGEN
MEAN = 0.175
One Sigma Standard Deviation = +/- 0.005
Expanded Uncertainty = +/- 0.010
(k=2, 95% confidence) (n=80)

% NITROGEN
MEAN = 0.0038
One Sigma Standard Deviation = +/- 0.0009
Expanded Uncertainty = +/- 0.0018
(k=2, 95% confidence)(n=80)

% HYDROGEN
MEAN = 0.0090
One Sigma Standard Deviation = +/- 0.0012
Expanded Uncertainty = +/- 0.0024
(k=2, 95% confidence)(n=150)

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, 173c, 176, 173b**
BCR CRM	**276, 024, 059b**
BCS CRM	**356**

Notes

The mean analytical values were derived by separate data sets 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 without preparation. Multiple pins may be used per test method requirements. This product has an indefinite shelf life. This reference material was produced in accordance to ISO Guide 34-2009.

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 reference 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 15, 2012

Kent Dyer, Technical Manager

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