

# Alpha Resources, Inc.

## Certificate Of Analysis

AR 953  
TOOL STEEL CHIP STANDARD  
LOT # 1014E

**% CARBON**  
MEAN = 0.929  
One Sigma Standard Deviation = +/- 0.009  
Expanded Uncertainty = +/- 0.018  
(k=2, 95% confidence) n=50

**% SULFUR**  
MEAN = 0.006  
One Sigma Standard Deviation = +/- 0.001  
Expanded Uncertainty = +/- 0.002  
(k=2, 95% confidence) n=50

**% NITROGEN**  
MEAN= 0.0053  
One Sigma Standard Deviation = +/- 0.0004  
Expanded Uncertainty = +/- 0.0008  
(k=2, 95% confidence) n=50

**% OXYGEN = (0.0075) REFERENCE ONLY**

Method of Analysis is ASTM E 1019-11, ARI 033 and ARI 034

Primary (NMI) Standards Employed:

NIST SRM	163, 134a, 337a, 16f, 363, 50c, 12h
NCS	NS11027, NS20035b
JSS	030-8, 057-9, 3-37, 3-41
EURO	235-1, 227-1, 035-1, 079-1

### Notes:

The mean analytical values were derived by data sets showing traceability to the above mentioned primary 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 evaluated and determined 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 contains 150g, clean chips, to be used directly from the bottle with no preparation needed. This standard has an indefinite shelf life. Keep sealed and store under normal laboratory conditions.

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 certificate cannot be reproduced except in full. For good laboratory practice it is recommended that all standards be verified prior to use. This standard was prepared in accordance to ISO Guide 34 and ISO Guide 31.

This is a Certified Reference Material (working standard), and is traceable to the above-mentioned. These test results are accredited under the Alpha Resources Inc. laboratory's ISO/IEC 17025 and ISO Guide 34 accreditation (RMP) issued by ANSI-ASQ/ANAB. Refer to certificate and scope of accreditation AC-1200 and AR-1920.

Certified February 25, 2015

  
Technical Manager