

Alpha Resources, LLC

Certificate Of Analysis

AR 315
CAST IRON REFERENCE STANDARD
LOT # 417B

% CARBON
MEAN = 3.07
One Sigma Standard Deviation = ± 0.03
Expanded Uncertainty = ± 0.06
(k=2, @95% confidence. n=58)

% SULFUR
MEAN = 0.109
One Sigma Standard Deviation = ± 0.006
Expanded Uncertainty = ± 0.012
(k=2, @95% confidence. n=49)

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

Primary (NMI) Standards Employed:

NIST	6g, 4L
NCS	HC11003, HC11007, HC16006b, HC11010
BAS	484-1
CKD	228
CTIF	FB12

The intended use of this reference standard is for the calibration and continued quality validation of Carbon and Sulfur in induction combustion, IR detection systems. The mean analytical values were derived data sets showing traceability to the above mentioned NMI standards, and reported in mass fraction. The analytical sample size was 0.3-0.5g nominal as suggested by the instrument manufacturer(s). The minimum sample size is subject to the ASTM test method and detection capability of your analyzer. 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 reference was identified 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 reference standard. This bottle contains 150g, cast iron shot, 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. Produced in accordance to ISO Guide 31 and ISO17034.

This is a Certified Reference Material (working reference standard), and is traceable to the above-mentioned standards. For good laboratory practice, it is recommended that all standards be verified prior to use. These test results are accredited under the Alpha Resources LLC laboratory's ISO/IEC 17025 and ISO Guide 34 accreditation (RMP) issued by ANSI-ASQ/ANAB. Refer to certificate and scope of accreditation(s) AC-1200 and AR-1920.

Certified June 21, 2017



Technical Manager