

% Carbon
Mean = 3.37
Standard Deviation = +/- 0.02
Expanded Uncertainty = +/- 0.05
(k=2, @ 95% confidence, n=39)

%Sulphur
Mean = 0.078
Standard Deviation = +/- 0.003
Expanded Uncertainty = +/- 0.007
(k=2, @ 95% confidence, n=40)

Method of analysis is ASTM E 1019-18 and ARI 033.

Primary (NMI)/Guide 34/ISO17034 Standards Employed:

NIST	338, 4L, 107c, 6g
NCS	HC16011, HC11003, HC11007
BAS	481-1

ALPHA - AR310-1117A, AR318-1015C, AR315-417B, AR309-516D

Notes

The intended use of this reference standard is for the calibration and continued quality verification of Carbon and Sulphur in induction combustion, IR detection systems. The mean analytical values were derived from data sets showing trace-ability to the above mentioned NMI standards and reported in mass fraction. The precision values represent the estimated mean, standard deviation and expanded uncertainty derived from the data sets. The analytical sample test size used 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 analyser. Refer to your test method for the expanded method derived uncertainty if needed.

The material used in production of this standard was sampled in accordance with ARI 032. The samples used 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 powder, to be used directly from the bottle with no preparation needed. While unable to determine a definite shelf life, this reference should be reviewed every 25 years from the date of certification. 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 Elemental Microanalysis Ltd 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 secondary standards be verified prior to use

Elemental Microanalysis Limited

Certified October 26, 2018