

**Certificate of Analysis
Part No. B2501
Carbon & Sulphur Ring Standard**

Certificate Number 218D
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% Carbon
Mean = 0.0363
Standard Deviation = +/- 0.0021
Expanded Uncertainty = +/- 0.0047
(k=2, @ 95% confidence limit) (n=42)

%Sulphur
Mean = 0.0174
Standard Deviation = +/- 0.0008
Expanded Uncertainty = +/- 0.0018
(k=2, @ 95% confidence limit) (n=42)

Method of analysis is ASTM E 1019-11 and ARI 033

Primary (NMI)/Guide 34 Reference Standards employed:

| | | |
|-------|--|----------------------------------|
| | NIST SRM | 123c, 106b, 339, 32e, 348a, 125b |
| | JSS | 151-18 |
| | BAM/BAS | 284-1, 294-1, 289-1 |
| ALPHA | AR870-1216A, AR871-716A, AR950-317E, AR961-1112C | |

Notes

The intended use of this reference standard is for the calibration and verification of induction combustion Carbon/Sulphur analysis by infra-red detection as described by ASTM E-1019. The mean analytical values were derived by 4 data sets showing trace-ability to the above mentioned primary reference standards, and reported in mass fraction. The minimum and typical size for testing was 1g (1 ring) per ASTM E1019. The precision values represent the mean value and estimated uncertainty derived from the data sets. Refer to your test method for additional uncertainty information.

The material used in production of this standard was identified in accordance with ARI 032. The samples used for round robin style 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 454g, 1g rings (nominal weight) 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 reference standard) and is traceable to the above-mentioned reference materials. For good laboratory practice it is recommended that all standards be verified prior to use.

Certified March 15th, 2018

Elemental Microanalysis Limited