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**Certificate of Analysis
Part No. B2519
High Carbon Steel Pin Standard**

Certificate Number 117A
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% Carbon**Mean = 0.931****One Sigma Standard Deviation = +/- 0.010****Expanded Uncertainty = +/- 0.020****(k=2, @ 95% confidence) (n=40)****(note: the use of tungsten and iron chip accelerators are needed for proper combustion)****%Sulphur****Mean = 0.0024****One Sigma Standard Deviation = +/- 0.0002****Expanded Uncertainty = +/- 0.0004****(k=2, @ 95% confidence) (n=68)**

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

Primary (NMI) Standards employed:

NIST SRM	16e, 337, 163, 2159, 14e, 134a, 155, 346a
JSS	066-5, 611-11, 602-10
EURO	235-1
ALPHA-	AR889-812b, AR899-A51995897, AR893-615A

Notes

The intended use of this reference standard is for the calibration and validation of induction combustion Carbon/Sulphur analysis by infra-red detection as described by ASTM E-1019. The mean analytical values were derived from several data sets showing trace-ability to the above mentioned NMI standards, and reported in mass fraction. The minimum and typical size for testing was 1g (1 pin) per ASTM E1019. 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 additional uncertainty information.

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 standard. This bottle consists of 454g, 1g pins (nominal weight) 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 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 standards be verified prior to use.

Certified March 27, 2017

Elemental Microanalysis Limited