

% Oxygen	%Sulphur*
Mean = 0.0251	Mean = 0.0006
Standard Deviation = ± 0.0003	Standard Deviation = 0.0001
Expanded Uncertainty = ± 0.0007 (k=2, @95% confidence, n=36)	Expanded Uncertainty = ± 0.0002 (k=2, @95% confidence, n=36)

ASTM METHODS: E2575-08, E1019-18* ALPHA: ARI-LAB-621 and ARI-LAB-622

*Below scope limit of test method

Primary (NMI/17034) Reference Standards Employed:

NIST	885, 495
NCS	NS11031
INFM	Cu300, Cu600, Cu200/4, Cu600/1

ALPHA – AR149-619F, AR148-9163192205, AR148-518B, AR146-318C, AR149-1116C, AR148-715B,
AR147-113C, AR147-120400

This copper pin reference material is intended to be a calibration or QC validation of Oxygen and Sulphur by the ASTM test methods listed. The analytical sample and minimum size used for testing was 1 pin (1g nominal). The precision values represent the estimated mean, standard deviation, and expanded uncertainty derived from data sets using ISO Guide 35, ANOVA, and the Guide to Uncertainty Measurement for guidance of calculations. Metrological traceability is to the SI derived unit of mass fraction expressed as percent. Refer to your test method and or your instrument manufacturer for the expanded method derived uncertainty. When necessary, professional judgment is applied toward consideration of data and statistical information.

The material used in production of this standard was identified in accordance with ARI-LAB-603. The samples for round-robin testing were selected in accordance with ARI-LAB-625. The above values relate only to the material used to produce this reference standard. This reference contains 100g, 1g pins (nominal), to be used directly from the bottle with no preparation. 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 certificate cannot be reproduced except in full.

This Reference Material (RM) is traceable to the above-mentioned reference materials. For good laboratory practice, it is recommended that all standards be verified as fit for purpose prior to use.

Certified on the 20th of April 2023

Elemental Microanalysis Ltd