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## Certificate of Analysis Part No. B2418 Oxygen & Nitrogen Pin Standard

Certificate Number 717B  
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**% Oxygen**  
**Mean = 0.0044**  
**Standard Deviation = +/- 0.0004**  
**Expanded Uncertainty = +/- 0.0008**  
**(k=2, @95%confidence, n=50)**

**% Nitrogen**  
**Mean = 0.0542**  
**Standard Deviation = +/- 0.0009**  
**Expanded Uncertainty = +/- 0.0018**  
**(k=2, 95% confidence, n=49)**

Method of Analysis is ASTM E 1019-11, and ARI 034

Primary (NMI) Standard Employed:

NIST	1099, 343a
BAM	O4, 231-2, 286-1, 227-1
NCS	NS11044, NS11043
JSS	226-1

### Notes

This pin reference standard is intended to be a calibration or QC validation of Oxygen and Nitrogen on inert gas fusion analysers utilising infrared and thermal conductivity detection as described in ASTM E1019. The analytical sample and minimum size used for testing was 1 pin (1.0g nominal). The precision values represent the estimated mean, standard deviation, and expanded uncertainty derived from the data sets. Refer to your test method and or your instrument manufacturer for the expanded method derived uncertainty. When necessary, professional judgement is applied toward consideration of data and statistical information.

The material used in production of this standard 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 reference contains 100g, 1.0gm pins (nominal), to be used directly from the bottle with no preparation. While unable to determine a definitive 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 (CRM), and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

Certified February 20, 2018

Elemental Microanalysis Limited