



NATIONAL PHYSICAL LABORATORY

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Certificate of Calibration



4002

NPL PRIMARY REFERENCE MATERIAL

Cylinder Number: D109148

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CUSTOMER: University of Helsinki
ADDRESS: Faculty of Science, INAR (Institute for Atmospheric and Earth System Research), P.O. Box 64, FI-00014 University of Helsinki, Finland
CALIBRATION DATE: 11 September 2023

AMOUNT FRACTION:

Component	Amount fraction / ($\mu\text{mol/mol}$)
Nitrogen monoxide	9.98 ± 0.10
Nitrogen	Balance

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a coverage probability of approximately 95 %. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

METHODS: Preparation: gravimetry; Analysis: chemiluminescence
TRACEABILITY: The values on this certificate are traceable to NPL Primary Standards
EXPIRY: Certificate valid for 2 years from the date of issue
PRESSURE: Fill pressure: 100 bar; Minimum utilisation pressure: 5 bar
STORAGE: No special precautions are required
HANDLING: Refer to ISO 16664
OUTLET: BS 341 No. 14 Valve
INTENDED USE: Calibration standard

Reference: 2023060184

Date of issue: 20 October 2023

Signed:

(Authorised Signatory)

Name: Dr D R Worton

(on behalf of NPLML)

Checked by:

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This certificate is consistent with the capabilities that are included in Appendix C of the MRA drawn up by the CIPM. Under the MRA, all participating institutes recognise the validity of each other's calibration and measurement certificates for the quantities, ranges and measurement uncertainties specified in Appendix C (for details see <http://www.bipm.org>).