



Certificate of Calibration

NPL PRIMARY REFERENCE MATERIAL

Cylinder Number: D217056

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CUSTOMER: Deutscher Wetterdienst

ADDRESS: Meteorologisches Observatorium Hohenpeissenberg, Albin-Schwaiger-Weg 10, Hohenpeissenberg, 82383, Germany

CALIBRATION DATE: 05 July 2024

AMOUNT FRACTIONS:

Component	Amount fraction / (nmol/mol)	Component	Amount fraction / (nmol/mol)
Ethane	3.93 ± 0.12	2-methylpentane	3.99 ± 0.12
Ethene	4.04 ± 0.13	<i>n</i> -hexane	4.04 ± 0.13
Propane	3.99 ± 0.12	Isoprene	3.92 ± 0.12
Propene	4.02 ± 0.13	<i>n</i> -heptane	3.95 ± 0.12
2-methylpropane	4.05 ± 0.13	Benzene	3.92 ± 0.12
<i>n</i> -butane	3.94 ± 0.12	2,2,4-trimethylpentane	3.99 ± 0.12
Ethyne	4.09 ± 0.21	<i>n</i> -octane	4.04 ± 0.13
<i>trans</i> -but-2-ene	3.99 ± 0.12	Toluene	3.92 ± 0.12
But-1-ene	3.96 ± 0.12	Ethylbenzene	3.91 ± 0.12
<i>cis</i> -but-2-ene	4.05 ± 0.13	<i>m</i> -xylene + <i>p</i> -xylene	7.83 ± 0.24
2-methylbutane	3.98 ± 0.12	<i>o</i> -xylene	3.93 ± 0.12
<i>n</i> -pentane	3.99 ± 0.12	1,3,5-trimethylbenzene	4.00 ± 0.13
1,3-butadiene	3.99 ± 0.12	1,2,4-trimethylbenzene	3.98 ± 0.12
<i>trans</i> -2-pentene	3.92 ± 0.12	1,2,3-trimethylbenzene	4.01 ± 0.13
Pent-1-ene	4.02 ± 0.13	Nitrogen	Balance

The reported expanded uncertainties are based on standard uncertainties 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: gas chromatography (FID)

TRACEABILITY: The values on this certificate are traceable to NPL Primary Standards

EXPIRY: Certificate valid for 5 years from the date of issue

PRESSURE: Fill pressure: 109 bar; Minimum utilisation pressure: 10 bar

STORAGE: No special precautions are required

HANDLING: Refer to ISO 16664

OUTLET: DIN 477 No. 1 Valve

INTENDED USE: Calibration standard

Reference: 2024080297-1

Date of issue: 07 October 2024

Signed:  (Authorised Signatory)

Name: Dr P K Petrov (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 CIPM MRA drawn up by the CIPM. Under the CIPM 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 <https://www.bipm.org/kcdb/>). The "CIPM MRA logo" and this statement attest only to the measurement(s) applied for determining the certified values on the certificate.