



NATIONAL PHYSICAL LABORATORY

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Certificate of Calibration

NPL CERTIFIED REFERENCE MATERIAL

Cylinder Number: D369862

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CUSTOMER: Institute for Atmospheric and Environmental Sciences
ADDRESS: Goethe University Frankfurt, Altenhoferallee 1, 60438 Frankfurt am Main, Germany
CALIBRATION DATE: 18 March 2026

CERTIFIED AMOUNT FRACTIONS:

Component	Amount fraction / (μmol/mol)	Component	Amount fraction / (μmol/mol)
Acetaldehyde	1.16 ± 0.06	1,2,4-trifluorobenzene	1.11 ± 0.06
Methanol	1.21 ± 0.13	Toluene	1.14 ± 0.06
Ethanol	1.15 ± 0.12	Hexamethylcyclotrisiloxane	0.96 ± 0.10
Isoprene	0.942 ± 0.048	<i>m</i> -xylene	1.10 ± 0.06
Acetone	1.15 ± 0.06	Octamethylcyclotetrasiloxane	1.05 ± 0.11
Dimethyl sulphide	1.12 ± 0.06	1,2,4-trimethylbenzene	1.12 ± 0.06
Acetonitrile	1.11 ± 0.06	3-carene	1.11 ± 0.06
Perfluorotributylamine	0.894 ± 0.045	Decamethylcyclopentasiloxane	1.12 ± 0.12
3-buten-2-one	1.05 ± 0.11	1,2,4-trichlorobenzene	1.11 ± 0.06
Butan-2-one	1.14 ± 0.06	Nitrogen	Balance
Benzene	1.08 ± 0.06	-	-

The reported expanded uncertainties are based on standard uncertainties multiplied by a coverage factor $k = 2$, providing a coverage probability of approximately 95 %.

METHODS: Preparation: gravimetry; Analysis: gas chromatography (FID)
TRACEABILITY: The values on this certificate are traceable to NPL Primary Standards
EXPIRY: Certificate valid for 1 year from the date of issue
PRESSURE: Fill pressure: 105 bar; Minimum utilisation pressure: 10 bar
STORAGE: No special precautions are required
HANDLING: Refer to ISO 16664
OUTLET: DIN 477 No. 8 Valve
INTENDED USE: Calibration standard

Reference: 2025070198

Date of issue: 27 March 2026

Signed:

(Authorised Signatory)

Name: Dr D R Worton

(on behalf of NPLML)

Checked by:

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