



NATIONAL PHYSICAL LABORATORY

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Certificate of Calibration

NPL CERTIFIED REFERENCE MATERIAL

Cylinder Number: D296770

This certificate provides traceability of measurement to the SI system of units, to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes, or to other internationally recognised standards. This certificate may not be reproduced other than in full, unless permission for the publication of an approved extract has been obtained in writing from NPL Management Ltd. The data included in this certificate applies only to those items specifically listed as tested, calibrated or sampled and cannot be used to assign any attributes beyond those shown by the data.

CUSTOMER: Forschungszentrum Juelich GmbH
ADDRESS: Institute of Climate and Energy Systems, ICE-3: Troposphäre, Wilhelm-Johnen-Strasse, Juelich, 52428, Germany
CALIBRATION DATE: 18 December 2024

CERTIFIED AMOUNT FRACTIONS:

Component	Amount fraction / ($\mu\text{mol/mol}$)	Component	Amount fraction / ($\mu\text{mol/mol}$)
Acetaldehyde	1.07 ± 0.06	1,2,4-trifluorobenzene	1.08 ± 0.06
Methanol	1.07 ± 0.11	Toluene	1.07 ± 0.06
Ethanol	1.31 ± 0.14	Hexamethylcyclotrisiloxane	1.01 ± 0.11
Isoprene	1.12 ± 0.06	<i>m</i> -xylene	1.04 ± 0.06
Acetone	1.15 ± 0.06	Octamethylcyclotetrasiloxane	1.02 ± 0.11
Dimethyl sulphide	1.14 ± 0.06	1,2,4-trimethylbenzene	1.05 ± 0.06
Acetonitrile	1.11 ± 0.06	3-carene	1.10 ± 0.06
Perfluorotributylamine	0.934 ± 0.047	Decamethylcyclopentasiloxane	1.22 ± 0.13
3-buten-2-one	1.07 ± 0.11	1,2,4-trichlorobenzene	1.00 ± 0.06
Butan-2-one	1.23 ± 0.07	Nitrogen	Balance
Benzene	1.06 ± 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 %.

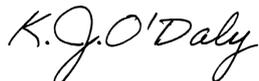
METHODS: Preparation: gravimetry; Analysis: gas chromatography (FID)
TRACEABILITY: The values on this certificate are traceable to NPL Primary Standards
EXPIRY: Certificate valid for 1 year from the date of issue
PRESSURE: Fill pressure: 105 bar; Minimum utilisation pressure: 10 bar
STORAGE: No special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

Reference: 2024080053

Date of issue: 08 January 2025

Signed:  (Authorised Signatory)

Name: Dr D R Worton (on behalf of NPLML)

Checked by: 

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