

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <p>UKAS REFERENCE MATERIALS</p> <p>4183</p> <p>Accredited to ISO 17034:2016</p>	<p>BOC Ltd</p> <p>Issue No: 016 Issue date: 26 August 2021</p>	
	<p>The Priestley Centre 10 Priestley Road The Surrey Research Park Guildford Surrey GU2 7XY</p>	<p>Contact: Dr K D Cleaver Tel: +44 (0) 7825 844998 E-Mail: kevin.cleaver@boc.com Website: www.boconline.co.uk</p>
<p>Reference material production performed by the locations specified below</p>		

Locations covered by the organisation and their relevant activities

Locations:

Location details	Activity	Location code
<p>Address The Priestley Centre 10 Priestley Road The Surrey Research Park Guildford Surrey GU2 7XY</p> <p>Local contact Dr K D Cleaver Tel: +44 (0) 7825 844998 Email: kevin.cleaver@boc.com</p>	<p><u>Head Office</u></p>	<p>A Guildford</p>
<p>Address 28 Deer Park Road London SW19 3UF</p> <p>Local contact Ms Akina Carey Tel: +44 (0) 7785 454036 Email: akina.carey@linde.com</p>	<p>MOT Mixture Binary Gas Mixtures Ethanol/Air Mixtures</p>	<p>B Morden</p>
<p>Address Hobson Way Stallingborough Immingham NE Lincolnshire DN41 8DZ</p> <p>Local contact Mr Walter Branowsky Tel: +44 (0)1469 577977 Fax: +44 (0)1469 576493 Email: walter.branowsky@boc.com</p>	<p>Natural Gas Mixtures Multi-component Gravimetric Gas Mixtures</p>	<p>C Immingham</p>



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DETAIL OF ACCREDITATION

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range	Characterisation Procedure / Technique	Type* (CRM / RM)	Location Code
<u>Analysed Gases</u>				
MOT mixture (Volume Fraction)	Carbon monoxide (3.5 %) Carbon dioxide (14 %) Propane (2000 ppm) Nitrogen (balance)	Measurement by a single, primary, definitive method at BOC	CRM	B
Binary gas mixtures	Propane/air (1.7 ppm to 1000 ppm) Carbon monoxide/nitrogen (2 ppm to 10 %) Carbon monoxide/air (2 ppm to 6.25 %) Carbon dioxide/nitrogen (0.1 % to 15 %) Nitric oxide/nitrogen (2 ppm to 1 %) Oxygen/nitrogen (0.5 % to 25 %) Sulphur dioxide/nitrogen (10 ppm to 3000 ppm)	Measurement by a single, primary, definitive method at BOC	CRM	B
Ethanol in air calibration standard for evidential breath testing	Ethanol/air 35 µg per 100 ml air (191.4 ppm) 22 µg per 100 ml air (120.3 ppm) 9 µg per 100 ml air (49.2 ppm)	Measurement by a single, primary, definitive method at BOC	CRM	B
Natural gas	Methane (55 % to 100 %) Ethane (0.008 % to 11 %) Propane (0.01 % to 8 %) <i>i</i> -Butane (0.004 % to 1.2 %) <i>n</i> -Butane (0.004 % to 1.3 %) <i>i</i> -Pentane (0.003 % to 0.4 %) <i>n</i> -Pentane (0.003 % to 0.4 %) <i>neo</i> -Pentane (0.002 % to 0.4 %) Hexane (0.0009 % to 0.35 %) Nitrogen (0.02 % to 20.4 %) Carbon Dioxide (0.09 % to 12 %)	Measurement by a single, primary, definitive method at BOC. Certification of Natural Gas mixtures against nationally traceable gas reference standards using gas chromatography in accordance with ISO 6143:2006	CRM	C
	Calculated values for: Gross Calorific Value Net Calorific Value Relative density Density Gross Wobbe Index Net Wobbe Index Mean Molecular Mass Compression Factor	Calculation of physical properties in accordance with BS EN ISO 6976:2005 or BS EN ISO 6976:2016		C



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<u>Analysed Gases</u> (cont'd) Gas mixtures	C ₁ to C ₃ (0.0008 % to 100 %) C ₄ (0.001 % to 50 %) C ₅ (0.001 % to 9 %) C ₆ (0.001 % to 1.5 %) C ₇ (0.001 % to 0.5 %) C ₈ (0.001 % to 0.2 %) C ₉ (0.001 % to 0.2 %) C ₁₀ (0.001 % to 0.05 %) Benzene (0.001 % to 1 %) Toluene (0.001 % to 0.4 %) Xylenes, m, p and o (0.001 % to 0.1 %) Argon (0.1 % to 100 %) Carbon dioxide (0.03 % to 100 %) Carbon monoxide (0.001 % to 100 %) Helium (0.1 % to 100 %) Hydrogen (0.08 % to 100 %) Nitrogen (0.1 % to 100 %) Oxygen (0.05 % to 100 %)	Measurement by a single, primary, definitive method at BOC Multi-component gaseous mixtures prepared by gravimetry in accordance with ISO 6142:2006 with analytical validation Where more than 5 components fall within the above scope for Natural gas, certification shall be using nationally traceable gas reference standards	CRM	C
END				

***Type**

CRM = Certified Reference Material(s)

RM = Reference Material(s)

Refer to ISO 17034 for full definitions