

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 4183 Accredited to ISO 17034:2016	BOC Ltd	
	Issue No: 018 Issue date: 03 August 2023	
	Forge 43 Church Street West Woking Surrey GU21 6HT	Contact: Dr K D Cleaver Tel: +44 (0) 7825 844998 E-Mail: kevin.cleaver@boc.com Website: www.boconline.co.uk
Reference material production performed by the locations specified below		

Locations covered by the organisation and their relevant activities

Locations:

Location details	Activity	Location code
Address Forge 43 Church Street West Woking Surrey GU21 6HT	Local contact Dr K D Cleaver Tel: +44 (0) 7825 844998 Email: kevin.cleaver@boc.com	<u>Head Office</u> A Woking
Address 28 Deer Park Road London SW19 3UF	Local contact Mr Freddie Evans Tel: +44 (0) 7785 454036 Email: Freddie.Evans@boc.com	MOT Mixture Binary Gas Mixtures Ethanol/Air Mixtures B Morden
Address Hobson Way Stallingborough Immingham NE Lincolnshire DN41 8DZ	Local contact Mr Walter Branowsky Tel: +44 (0)1469 577977 Fax: +44 (0)1469 576493 Email: walter.branowsky@boc.com	Natural Gas Mixtures Multi-component Gravimetric Gas Mixtures C Immingham



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DETAIL OF ACCREDITATION

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range	Characterisation Procedure / Technique	Type* (CRM / RM)	Location Code
<u>GAS MIXTURES</u>				
MOT mixture (Volume Fraction)	Volume Fraction (% vol/vol) Carbon monoxide (3.5) Carbon dioxide (14)	Measurement by a single, primary, definitive method at BOC	CRM	B
Binary gas mixtures	Volume Fraction (µvol/vol, equivalent to ppm (v)) Propane (2000) Nitrogen (balance) Amount fraction (µmol/mol, equivalent to ppm) Propane/air (1.7 to 1000) Carbon monoxide/nitrogen (2 to 1000) Carbon monoxide/air (2 ppm to 1000) Nitric oxide/nitrogen (2 ppm to 1000) Sulphur dioxide/nitrogen (10 to 3000) Amount fraction (% mol/mol) Carbon monoxide/nitrogen (0.1 to 10) Carbon monoxide/air (0.1 to 6.25) Carbon dioxide/nitrogen (0.1 to 15) Nitric oxide/nitrogen (0.1 to 1) Oxygen/nitrogen (0.5 to 25)	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 µmol/mol (ppm)) 22 µg per 100 ml air (120.3 µmol/mol (ppm)) 9 µg per 100 ml air (49.2 µmol/mol (ppm))	Measurement by a single, primary, definitive method at BOC	CRM	B



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<p><u>GAS MIXTURES</u> (cont'd)</p> <p>Natural gas</p>	<p>Amount fraction (% mol/mol)</p> <p>Methane (55 to 100)</p> <p>Ethane (0.008 to 11)</p> <p>Propane (0.01 to 8)</p> <p><i>i</i>-Butane (0.004 to 1.2)</p> <p><i>n</i>-Butane (0.004 to 1.3)</p> <p><i>i</i>-Pentane (0.003 to 0.4)</p> <p><i>n</i>-Pentane (0.003 to 0.4)</p> <p><i>neo</i>-Pentane (0.002 to 0.4)</p> <p>Hexane (0.0009 to 0.35)</p> <p>Nitrogen (0.02 to 20.4)</p> <p>Carbon Dioxide (0.09 to 12)</p> <p>Calculated values for:</p> <p style="padding-left: 20px;">Gross Calorific Value</p> <p style="padding-left: 20px;">Net Calorific Value</p> <p style="padding-left: 20px;">Relative density</p> <p style="padding-left: 20px;">Density</p> <p style="padding-left: 20px;">Gross Wobbe Index</p> <p style="padding-left: 20px;">Net Wobbe Index</p> <p style="padding-left: 20px;">Mean Molecular Mass</p> <p style="padding-left: 20px;">Compression Factor</p>	<p>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</p> <p>Calculation of physical properties in accordance with BS EN ISO 6976:2005 or BS EN ISO 6976:2016</p>	<p>CRM</p>	<p>C</p> <p>C</p>



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<p><u>GAS MIXTURES</u> (cont'd)</p> <p>Gas mixtures</p>	<p>Amount fraction (% mol/mol) C₁ to C₃ (0.0008 to 100) C₄ (0.001 to 50) C₅ (0.001 to 9) C₆ (0.001 to 1.5) C₇ (0.001 to 0.5) C₈ (0.001 to 0.2) C₉ (0.001 to 0.2) C₁₀ (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)</p>	<p>Measurement by a single, primary, definitive method at BOC</p> <p>Multi-component gaseous mixtures prepared by gravimetry in accordance with ISO 6142:2006 with analytical validation</p> <p>Where more than 5 components fall within the above scope for Natural gas, certification shall be using nationally traceable gas reference standards</p>	<p>CRM</p>	<p>C</p>
<p>END</p>				

***Type**

CRM = Certified Reference Material(s)

RM = Reference Material(s)

Refer to ISO 17034 for full definitions