


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p style="text-align: center;">4183</p> <p style="text-align: center;">Accredited to ISO Guide 34:2000</p>	BOC	
	Issue No: 005	Issue date: 02 August 2010
<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)1483 244308 Fax: +44 (0)1483 450741 E-Mail: kevin.cleaver@boc.com Website: www.BOCspecialGases.co.uk</p>	
Reference material production performed by the locations specified below		

Locations covered by the organisation and their relevant activities

Locations:

Location details	Activity	Location code		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Address The Priestley Centre 10 Priestley Road The Surrey Research Park Guildford Surrey GU2 7XY</td> <td style="width: 50%;">Local contact Dr K D Cleaver Tel: +44 (0)1483 244308 Fax: +44 (0)1483 450741 Email: kevin.cleaver@boc.com</td> </tr> </table>	Address The Priestley Centre 10 Priestley Road The Surrey Research Park Guildford Surrey GU2 7XY	Local contact Dr K D Cleaver Tel: +44 (0)1483 244308 Fax: +44 (0)1483 450741 Email: kevin.cleaver@boc.com	<u>Head Office</u>	Guildford
Address The Priestley Centre 10 Priestley Road The Surrey Research Park Guildford Surrey GU2 7XY	Local contact Dr K D Cleaver Tel: +44 (0)1483 244308 Fax: +44 (0)1483 450741 Email: kevin.cleaver@boc.com			
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Address 28 Deer Park Road London SW19 3UF</td> <td style="width: 50%;">Local contact Mr Paul Willson Tel: +44 (0)20-8542 6677 Fax: +44 (0)20-8543 9678 Email: paul.willson@boc.com</td> </tr> </table>	Address 28 Deer Park Road London SW19 3UF	Local contact Mr Paul Willson Tel: +44 (0)20-8542 6677 Fax: +44 (0)20-8543 9678 Email: paul.willson@boc.com	MOT Mixture Binary Gas Mixtures Ethanol/Air Mixtures	Morden
Address 28 Deer Park Road London SW19 3UF	Local contact Mr Paul Willson Tel: +44 (0)20-8542 6677 Fax: +44 (0)20-8543 9678 Email: paul.willson@boc.com			
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Address Hobson Way Stallingborough Immingham NE Lincolnshire DN41 8DZ</td> <td style="width: 50%;">Local contact Mr Walter Branowsky Tel: +44 (0)1469 577977 Fax: +44 (0)1469 576493 Email: walter.branowsky@boc.com</td> </tr> </table>	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 Gas Mixtures	Immingham
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			



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DETAIL OF ACCREDITATION

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range	Characterisation Procedure / Technique
<p><u>Analysed Gases</u></p> <p>Quaternary gas mixture</p> <p>Binary gas mixtures</p> <p>Ethanol in air calibration standard for evidential breath testing</p> <p>Natural gas</p>	<p>Carbon monoxide (3.5 %) Carbon dioxide (14 %) Propane (2000 ppm) Nitrogen (balance)</p> <p>Propane/air (1.7 ppm to 1000 ppm) Carbon monoxide/nitrogen (2 ppm to 10 %) Carbon monoxide/air (2 ppm to 3.1 %) 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)</p> <p>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)</p> <p>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 %)</p> <p>C₆+ (0.0009 % to 0.35 %) Helium (0.01 to 0.5 %) Nitrogen (0.02 % to 20.4 %) Carbon Dioxide (0.09 % to 12 %)</p> <p>Calculated values for: Calorific Value (superior) Calorific Value (inferior) Relative density Density Wobbe Index Mean Molecular Mass Compression Factor</p>	<p>Measurement by a single, primary, definitive method at BOC</p> <p>Measurement by a single, primary, definitive method at BOC</p> <p>Measurement by a single, primary, definitive method at BOC</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 6143:2001</p> <p>C₆+ is the sum of hydrocarbon amount fractions containing six carbon atoms or greater</p> <p>Calculation of physical properties in accordance with ISO 6976:1995</p>



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<u>Analysed Gases</u> (cont'd) Natural gas (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 with analytical validation against traceable standards Where more than 5 components fall within the above scope for Natural gas, certification shall be using nationally traceable gas reference standards
	END	