


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 0408 Accredited to ISO/IEC 17025:2017	BOC Ltd	
	Issue No: 050 Issue date: 16 December 2025	
	Forge 43 Church Street West Woking Surrey GU21 6HT	Contact: Mrs Gautami Snewin Tel: +44 (0) 7990 089696 E-Mail: gautami.snewin@boc.com Website: www.boconline.co.uk

Calibration performed by the Organisations at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Forge 43 Church Street West Woking Surrey GU21 6HT	Local contact Mrs Gautami Snewin Tel: +44 (0) 7990 089696 Email: gautami.snewin@boc.com	Head Office	A Woking
Address 28 Deer Park Road London SW19 3UF	Local contact Ms Prejeetha Jeyalohithen Tel: +44 (0) 7345 774614 Email: prejeetha.jeyalohithen@boc.com	MOT Mixture Binary Gas Mixtures Ethanol/Air Mixture	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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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
GAS MIXTURES				
MOT MIXTURE			Certification of MOT gas mixtures against traceable gas reference standards	B
Carbon monoxide	Volume Fractions (% vol/vol) 3.5	1.0 % relative		
Carbon dioxide	14	1.0 % relative		
Propane	($\mu\text{vol/vol}$, equivalent to ppm (v)) 2000	1.0 % relative		
Nitrogen	balance			
BINARY GAS MIXTURES			Certification of binary gas mixtures against traceable gas reference standards	B
Propane/air	Amount fraction ($\mu\text{mol/mol}$, equivalent to ppm) 1.7 to 10 10 to 100 100 to 1000	6.6 % to 1.9 % relative 1.9 % to 1.0 % relative 1.5 % to 0.9 % relative		
Carbon monoxide/nitrogen	Amount fraction ($\mu\text{mol/mol}$, equivalent to ppm) 2 to 10 10 to 100 100 to 1000	2.6 % to 1.2 % relative 2.7 % to 1.0 % relative 1.5 % to 0.9 % relative		
Carbon monoxide/nitrogen	Amount fraction (% mol/mol) 0.1 to 1 1 to 10	1.6 % to 0.9 % relative 1.6 % to 0.9 % relative		
Carbon monoxide/air	Amount fraction ($\mu\text{mol/mol}$, equivalent to ppm) 2 to 10 10 to 100 100 to 1000	2.6 % to 1.2 % relative 2.7 % to 1.0 % relative 1.5 % to 0.9 % relative		
Carbon monoxide/air	Amount fraction (% mol/mol) 0.1 to 1 1 to 6.25	1.6 % to 0.9 % relative 1.6 % to 0.9 % relative		
Carbon dioxide/nitrogen	Amount fraction (% mol/mol) 0.1 to 1 1 to 5 5 to 15	1.7 % to 1.0 % relative 1.2 % to 0.9 % relative 1.2 % to 0.9 % relative		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
BINARY GAS MIXTURES (cont'd)			Certification of binary gas mixtures against traceable gas reference standards	B
Nitric oxide/nitrogen	Amount fraction ($\mu\text{mol/mol}$, equivalent to ppm) 2 to 10 10 to 20 20 to 100 100 to 1000	1.4 % to 1.3 % relative 1.3 % relative 1.2 % to 0.9 % relative 1.6 % to 0.9 % relative		
Nitric oxide/nitrogen	Amount fraction (% mol/mol) 0.1 to 1	1.6 % to 0.9 % relative		
Oxygen/nitrogen	Amount fraction (% mol/mol) 0.5 to 5 5 to 25	2.2 % to 0.9 % relative 1.6 % to 1.2 % relative		
Sulphur dioxide/nitrogen	Amount fraction ($\mu\text{mol/mol}$, equivalent to ppm) 10 to 30 30 to 100 100 to 300 300 to 1000 1000 to 3000	1.8 % to 1.4 % relative 1.7 % to 1.1 % relative 1.7 % to 0.8 % relative 1.6 % to 0.7 % relative 0.9 % to 0.6 % relative		
ETHANOL IN AIR CALIBRATION STANDARD FOR EVIDENTIAL BREATH TESTING			Certification of ethanol/air mixtures against traceable gas reference standards	B
Ethanol/air	35 μg Ethanol per 100 ml air (equivalent to 191.4 $\mu\text{mol/mol}$ which corresponds to ppm)	0.4 μg per 100 ml air (1.1 % relative)		
Ethanol/air	22 μg Ethanol per 100 ml air (equivalent to 120.3 $\mu\text{mol/mol}$ which corresponds to ppm)	0.3 μg per 100 ml air (1.3 % relative)		
Ethanol/air	9 μg Ethanol per 100 ml air (equivalent to 49.2 $\mu\text{mol/mol}$ which corresponds to ppm)	0.2 μg per 100 ml ai (1.9 % relative)		



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NATURAL GAS MIXTURES	Amount fraction (% mol/mol)	Amount fraction (% mol/mol)	Certification of Natural Gas mixtures against traceable gas reference standards using gas chromatography in accordance with BS EN ISO 6143:2006	C
Methane	55 to 100	0.05		
Ethane	0.008 to 1.5 1.5 to 11	0.28 % relative + 0.0003 0.3 % relative		
Propane	0.01 to 0.5 0.5 to 8	0.25 % relative + 0.0005 0.35 % relative		
i-Butane	0.004 to 0.25 0.25 to 1.2	0.46 % relative + 0.0001 0.5 % relative		
n-Butane	0.004 to 0.25 0.25 to 1.3	0.46 % relative + 0.0001 0.5 % relative		
i-Pentane	0.003 to 0.2 0.2 to 0.4	0.45 % relative + 0.0001 0.5 % relative		
n-Pentane	0.003 to 0.2 0.2 to 0.4	0.45 % relative + 0.0001 0.5 % relative		
neo-Pentane	0.002 to 0.4	0.8 % relative + 0.0001		
Hexane	0.0009 to 0.1 0.1 to 0.35	0.5 % relative + 0.0001 0.6 % relative		
Nitrogen	0.02 to 20.4	0.2 % relative + 0.002		
Carbon dioxide	0.09 to 12	0.2 % relative + 0.002		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
<p>GAS MIXTURE PROPERTIES Calculated values from composition</p> <p>Superior calorific value Molar basis (kJ/mol) Mass basis (MJ/kg) Volume basis (MJ/m³)</p> <p>Inferior calorific value Molar basis (kJ/mol) Mass basis (MJ/kg) Volume basis (MJ/m³)</p> <p>Relative density (air = 1) Density (kg/m³)</p> <p>Wobbe index (MJ/m³)</p> <p>Mean molecular mass (kg/kmol) Compression factor</p>	<p>Calculations are restricted to gas mixtures with the following amount fractions (% mol/mol):</p> <p>nitrogen < 30 carbon dioxide < 15 ethane < 15 methane no restriction other components < 5</p> <p>Calculated at the following reference conditions: All at 101.325 kPa (1 atm) and</p> <p>Metering temperature at 0°C and Combustion temperature at 25°C Metering temperature at 0°C and Combustion temperature at 15°C Metering temperature at 0°C and Combustion temperature at 0°C Metering temperature at 15°C and Combustion temperature at 15°C Metering temperature at 15°C and Combustion temperature at 25°C Metering temperature at 20°C and Combustion temperature at 20°C Metering temperature at 20°C and Combustion temperature at 25°C</p>	<p>0.1 % relative 0.1 % relative 0.1 % relative</p> <p>0.1 % relative 0.1 % relative 0.1 % relative</p> <p>0.1 % relative 0.1 % relative</p> <p>0.1 % relative</p> <p>0.1 % relative 0.1 % relative</p>	<p>Values calculated in accordance with BS EN ISO 6976:2005 on a <i>real</i> or <i>ideal</i> basis assuming mixture is dry (free from water).</p> <p>Mass and volume basis calorific values and the Wobbe index can also be expressed in units of kilowatt hours (kWh/kg and kWh/m³).</p>	C



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GAS MIXTURE PROPERTIES Calculated values from composition				
Gross calorific value Molar basis (kJ/mol) Mass basis (MJ/kg) Volume basis (MJ/m ³)	Volume-basis calculations are restricted to mixtures for which the compression factor at the reference conditions is greater than 0.9	Measurement uncertainties are calculated in accordance with BS EN ISO 6976:2016 Section 11 and Annex B, and are dependant on the mixture composition and the component measurement uncertainties derived at the time of certification.	Values calculated in accordance with BS EN ISO 6976:2016 on a <i>real</i> or <i>ideal</i> basis assuming mixture is dry (free from water).	C
Net calorific value Molar basis (kJ/mol) Mass basis (MJ/kg) Volume basis (MJ/m ³)	Calculated at the following reference conditions: All at 101.325 kPa (1 atm) and		Mass and volume basis calorific values and the Wobbe index can also be expressed in units of kilowatt hours (kWh/kg and kWh/m ³).	
Relative density (air = 1) Density (kg/m ³)	Metering temperatures (°C) of 0, 15, 15.55 (60°F), 20 Combustion temperatures (°C) of			
Gross Wobbe index (MJ/m ³) Net Wobbe index (MJ/m ³)	0, 15, 15.55 (60°F), 20, 25			
Mean molecular mass (kg/kmol) Compression factor				
GAS MIXTURES	Amount fraction (% mol/mol)		Multi-component gaseous mixtures prepared by gravimetry in accordance with BS EN ISO 6142:2006 with analytical validation.	C
C ₁ - C ₃	0.0008 to 100	Amount fractions from (1 to 100) % mol/mol: 0.5 % relative		
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	Amount fractions from (0.1 to 1) % mol/mol: 1 % relative	Where more than 5 components fall within the above scope for Natural Gas, certification shall be using traceable gas reference standards.	
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	Amount fractions from (0.0008 to 0.1) % mol/mol: 2 % relative		
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			
END				



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Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand. Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation $Q[a, b]$ stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$