Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0002

Accredited to ISO/IEC 17025:2005

NPL Management Ltd

Issue No: 068 **Issue date:** 03 November 2017

Hampton Road
Teddington
Middlesex
TW11 0LW

Contact: Customer Helpline
Tel: +44 (0)20 8943 7070
Fax: +44 (0)20 8614 0482
E-Mail: measurement_services@npl.co.uk
Website: www.npl.co.uk

Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address Hampton Road Teddington Middlesex TW11 0LW **Local contact** Mr Tahir Maqba Customer Services Manager Tel: +44 (0)20 8943 6796 Fax: +44 (0)20 8614 0482 E-Mail: tahir.maqba@npl.co.uk Website: www.npl.co.uk	**Support Functions:** Quality System Quality Audit Administration **Testing:** Mechanical, metallurgical, physical and chemical testing **Sampling and Testing:** Stack Emissions Testing	A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
Customers' premises/sites	Sampling and analysis	B
Customer Sites requiring Stack Emissions Testing	Stack Emissions Testing	C

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ENGINEERING COMPONENTS & TOOLS *Service Reference:* LD10	<u>Dimensional Tests</u> Length measurement up to 550 x 500 x 450 mm, with following best measurement capability (uncertainty): 1.5+L/260 µm, where L is in mm 0.80 µm (using substitution method) 0.40 µm (using reversal method) <u>Physical Tests</u>	Documented in-house Method QPLM/B/216	A
THERMAL INSULATION PRODUCTS *Service Reference:* MTA2	Thermal conductivity/thermal resistance over the temperature range 5 °C to 40 °C Conductivity range up to 0.1 W/m.K Uncertainty ± 2.5 %	EN 12667:2001, EN 12939:2001 and ISO 8301:1991 using a 610 mm square Heat Flow Meter and following documented in-house method QPDQM/B/421	A
THERMAL INSULATION PRODUCTS *Service Reference:* MTA2	Thermal conductivity/thermal resistance over the temperature range - 175 °C to + 50 °C Conductivity range up to 0.15 W/m.K Uncertainty ± 2.5 %	EN 12667:2001 and ISO 8302:1991 using 305 mm diameter NPL Guarded Hot-Plate and following documented in-house method QPDQM/B/403	A
THERMAL INSULATION PRODUCTS *Service Reference:* MTA1	Thermal conductivity/thermal resistance over the temperature range 140 °C to 800 °C Conductivity range up to 0.5 W/m.K Uncertainty ± 5 %	EN 12667:2001 and ISO 8302:1991 using 305 mm diameter NPL Guarded Hot-Plate and following documented in-house method QPDQM/B/401	A
HOMOGENEOUS and INHOMOGENEOUS MATERIALS *Service Reference:* MTA2	Thermal conductivity/thermal resistance over the temperature range - 100 °C to + 250 °C Conductivity 0.1 W/m.K to 10 W/m.K Uncertainty ± 7.5 %	ASTM E1530:06 using 50 mm diameter Guarded Heat Flow Meter and following documented in-house method QPDQM/B/422	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS and ALLOYS *Service Reference:* MTA1	Thermal conductivity/thermal resistance over the temperature range 50 °C to 500 °C Conductivity 10 W/m.K to 240 W/m.K Uncertainty ± 3.4 %	Documented in-house method QPDQM/B/411 using Axial Flow Meter	A
GAS MEASURING EQUIPMENT			
Continuous Emission Monitoring Systems (CEMS) and Process Gas Analysers *Service Reference:* QE21	**Test Gases** All of the following compliance tests may be conducted with any one or more of the following gases, at concentrations up to the maximum shown with [uncertainty] relative to the nominal concentration. The minimum concentration of each test gas, apart from zero gas, is 1 μmol/mol. **SO_2** 10 gm^{-3} [± 0.5 %] **CO** 15 gm^{-3} [± 0.4 %] **CO_2** 20 % mol/mol [± 1 %] **NO** 7 gm^{-3} [± 0.5 %] **NO_2** 10 gm^{-3} [± 0.5 %] **N_2O** 4 gm^{-3} [± 0.5 %] **HCl** 2 gm^{-3} [± 3 %] **NH_3** 100 mg m^{-3} [± 3 %] **H_2S** 3 gm^{-3} [± 3 %] **CH_2Cl_2** 500 μmol/mol [± 1 %]	Environment Agency (MCERTS) Performance standards and test procedures for continuous emission monitoring systems. For gaseous, particulate and flow-rate monitoring systems. EN 15267-3:2007 Documented in-house method QPDQM/B/518 incorporating the requirements of the above documents	A
	Volatile Organic Compounds (methane, propane, acetic acid, acetone, acrolein, formic acid, formaldehyde, methanol, ethane, ethene, propene, butane, acetaldehyde) 10 mmol/mol [± 0.5 %]		A
	Halocarbons (112, 113, 113A, 114, 123) 10 μmol/mol [± 2 %]		

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
GAS MEASURING EQUIPMENT (cont'd) Continuous Emission Monitoring Systems (CEMS) and Process Gas Analysers *Service Reference:* QE21 (cont'd)	**Test Gases** (cont'd) **Oxygen** 25 % mol/mol [± 0.5 %] **Water Vapour** 45 % mol/mol [± 3 %] **Zero Gas** Zero and diluent gases contain < 0.1 % of measuring range **Compliance Tests** **Linearity** ± 0.5 % of test range **Repeatability** ± 0.5 % of concentration **Response Time** Step change of concentration to 90% of final value within 10 s [± 10 s] **Test Gas Temperature Range** 20 °C to 200 °C [± 1 °C] **Test Gas Pressure Variation** up to + 3 kPa [± 0.3 kPa] **Ambient Temperature Range** - 25 °C to + 70 °C [± 1 °C] **Ambient Humidity Range** 5 %rh to 95 %rh [± 3 %rh]		A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
GAS MEASURING EQUIPMENT (cont'd)			A
Continuous Emission Monitoring Systems (CEMS) *Service Reference:* QE84	**Field Tests** Lack of fit (linearity) Response time Maintenance interval Long term stability (Zero shift and span change) Reproducibility Availability Contamination check of in-situ Systems Calibration function tests Tests for gaseous monitoring CEMS for CO, CO_2, SO_2, O_2, H_2O, N_2O, NO and NO_2	Environment Agency (MCERTS) Performance standards and test procedures for continuous emission monitoring systems. For gaseous, particulate and flow-rate monitoring systems. EN 15267-3:2007 Documented in-house methods QPDQM/B/538, QPAS/B/542 and QPAS/B/555 incorporating the requirements of the above documents	C
Stack Emissions - Continuous Emissions Monitoring Systems (CEMS) *Service Reference:* QE84	QAL 2, and the Annual Surveillance Test (AST) for CEMS	Documented in house method QPAS/B/542 to meet the requirements of BS EN 14181:2014, Environment Agency MID 14181 (TGN M20 Annex A) and other requirements of the Environment Agency (MCERTS) Performance Standard and DD CEN/TS 15675:2007/ BS EN 15259:2007	A, C

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
GAS MEASURING EQUIPMENT (cont'd)			
Continuous ambient monitors (CAMS) *Service Reference:* QE21	CAMS that measure benzene and/or other volatile organic compounds		A
	Laboratory tests Repeatability Short-term drift Sample gas pressure Lack of fit Carry over (memory effect) Supply voltage Ambient temperature Cross interference with ozone Cross interference with water (relative humidity test) Cross interference with organic compounds	Environment Agency (MCERTS) Performance standards for continuous ambient air monitoring systems EN 14662-3:2005 Documented in-house method QPAS/B/528A incorporating the requirements of the above documents	
	Field tests Operational Requirements Long-term drift Maintenance interval Availability Reproducibility under field conditions Uncertainty calculation	Environment Agency (MCERTS) Performance standards for continuous ambient air monitoring systems EN 14662-3:2005 Documented in-house method QPAS/B/528B incorporating the requirements of the above documents	B

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WORKPLACE AND AMBIENT ATMOSPHERIC POLUTANTS, AND OTHER GAS SAMPLES	<u>Chemical Tests</u>		
Volatile organic Compounds in air using Sorbent tubes *Service Reference:* QE83	Volatile Compounds: iso-butane, n-butane, 1,3 butadiene, iso-pentane, n-pentane, n-hexane, benzene, toluene, m/p-xylene, ethylbenzene, o-xylene.	Documented in house method QPAS/B/566 using sorbent tubes followed by thermal desorption and GCMS Based on BS-EN ISO 16017-1&2	A
	<u>Onsite Sampling</u>		
On site Sampling of Pumped and diffusive sorbent tubes *Service Reference:* QE83	Nitrogen dioxide Nitrogen monoxide Sulphur dioxide Volatile organic compounds	Documented in-house methods QPAS/B/566	B
	<u>Chemical Tests</u>		
Glass adsorption tubes containing gold-coated silica *Service Reference:* QE85-8020	Total mercury	Thermal desorption-atomic fluorescence spectroscopy. Documented in-house method QPAS/B/544 in accordance with BS EN 15852:2010	A
Weight of suspended particulate matter *Service Reference:* QE85-8050	25 ug to 7 mg equivalent to 1 $\mu g/m^3$ for a 1 m^3/hour sampler to 120 $\mu g/m^3$ for a 2.3 m^3/hour sampler	Documented in-house method based on BS EN 14907:2005	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WORKPLACE AND AMBIENT ATMOSPHERIC POLUTANTS, AND OTHER GAS SAMPLES (cont'd)	Chemical Tests (cont'd)		
Cellulose filters Acid digests (nitric acid and hydrogen peroxide) *Service Reference:* QE85-8010	Arsenic Cadmium Chromium Cobalt Copper Iron Lead Manganese Nickel Selenium Vanadium Zinc	Microwave digestion (for cellulose filters) and inductively coupled plasma - mass spectrometry (ICP-MS) Documented in-house method QPAS/B/533 in conformance with EN 14902:2004	A
Particulate matter on filters or in aqueous solution *Service Reference:* QE85-8030	Fluoride Chloride Nitrate Sulphate	Documented in-house method QPAS_B_552 using ion chromatography	A
Filters, polyurethane foam (PUF) cartridges and solutions in organic solvents *Service Reference:* QE85-8060	Acenaphthylene Phenanthrene Anthracene Fluoranthene Pyrene Benzo[c]phenanthrene Benzo[a]anthracene Cyclopenta[c,d]pyrene Chrysene Benzo[b]fluoranthene Benzo[j]fluoranthene Benzo[k]fluoranthene Benzo[e]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3-cd]pyrene Dibenz[a,c]anthracene Dibenz[a,h]anthracene Benzo[g,h,i]perylene Anthanthrene Dibenzo[a,l]pyrene Dibenzo[a,e]pyrene Coronene	Soxhlet extraction and analysis by gas chromatography – mass spectrometry (GC-MS) Documented in-house method QPAS/B/560 in conformance with EN 15549:2008	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WORKPLACE AND AMBIENT ATMOSPHERIC POLUTANTS, AND OTHER GAS SAMPLES (cont'd)	<u>Chemical Tests</u> (cont'd)		
Quartz filters Air particulate samples *Service Reference:* QE85-8040	Total carbon (elemental carbon plus organic carbon) Total carbon up to 100 µg/cm^3	Thermal-optical method - volatilisation and oxidation of carbon-containing PM components, quantification of the carbonaceous gases released Documented in-house method QPAS/B/561, based on CEN/TR 16243	A
Impurities in hydrogen gas samples *Service Reference* QE13	Amount fraction of: Water Total hydrocarbons Oxygen Helium Nitrogen Argon Carbon dioxide Carbon monoxide Total sulphur compounds	Documented in-house methods QPDQM/B/500 and DN34	A
	<u>Physical Tests</u>		
Filter Papers and Rinse Solutions *Service Reference:* QE84	Weighing of Particulate Matter	BS EN 13284-1:2002 BS ISO 9096:2003 (QPAS/B/536)	A
	Weighing of Particulate Matter <10 micron (PM10 and PM2.5)	BS EN ISO 23210:2009 (QPAS/B/563)	
Testing of Stack Emissions to Atmosphere *Service Reference:* QE84	<u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited Laboratory</u>	National, International and other recognised standards using documented in-house methods to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007	
	Ammonia	US EPA Method 26 (QPAS/B/540)	C
	Total Particulate Matter (20 mg/m^3 to 1000 mg/m^3)	BS ISO 9096:2003 (QPAS/B/536)	C

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Sampling and On-Line Analysis		
Testing of Stack Emissions to Atmosphere *Service Reference:* QE84 (cont'd)	Sampling with subsequent analysis by an ISO/IEC 17025 Accredited Laboratory	National, European, International and Environment Agency specified standards including MIDs and documented in-house methods to meet the requirements of the Environment Agency (MCERTS) Performance Standard and DD CEN/TS 15675:2007/ BS EN 15259:2007	
	Total Particulate Matter	BS EN 13284-1:2002 (QPAS/B/536)	C
	Particulate Matter <10 micron (PM10 and PM2.5)	BS EN ISO 23210:2009 (QPAS/B/563)	
	Hydrogen chloride	BS EN 1911:2010 (QPAS/B/540)	C
	Hydrogen fluoride	BS ISO 15713:2006 (QPAS/B/540)	C
	Sulphur dioxide	BS EN 14791:2005 (QPAS/B/540)	C
	Ammonia	BS EN 14791:2005 (QPAS/B/540)	C
	Metals	BS EN 14385:2004 (QPAS/B/537)	C
	Mercury	BS EN 13211:2001 (QPAS/B/537)	C
	Dioxins and Furans	BS EN 1948-1:2006 (QPAS/B/539)	C
	Dioxin-like Polychlorinated Biphenyls (PCBs)	BS EN 1948-4 2010 (QPAS/B/539)	C

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack Emissions to Atmosphere *Service Reference:*QE84 (cont'd)	Sampling with subsequent analysis by an ISO/IEC 17025 Accredited Laboratory (cont'd)	National, European, International and Environment Agency specified standards including MIDs and documented in-house methods to meet the requirements of the Environment Agency (MCERTS) Performance Standard and DD CEN/TS 15675:2007/ BS EN 15259:2007	
	Polycyclic Aromatic Hydrocarbons (PAHs)	BS ISO 11338-1:2003 (QPAS/B/539)	C
	Speciated VOCs Mercaptans Amines and Amides Phenols Cresols Carboxylic Acids Aldehydes	Direct sampling of dry stacks and dynamic dilution sampling of hot wet stacks. Extractive sampling onto carbon or other sorbent tubes and analysis by solvent desorption or thermal desorption. PD CEN/TS 13649:2014 (QPAS/B/556)	C
	Sampling and On-Line Analysis		
	Pressure, Temperature and Velocity	BS EN ISO 16911-1 2013 MID BS EN ISO 16911-1 2013(QPAS/B/567)	C
	Water vapour (gravimetric analysis)	BS EN 14790:2005 (QPAS/B/536)	C
	Carbon dioxide*	ISO 12039:2001 (QPAS/B/538 - NDIR analyser)	C
	Carbon monoxide*	BS EN 15058:2006 (QPAS/B/538 - NDIR analyser)	C
	Oxides of nitrogen*	BS EN 14792:2005 (QPAS/B/538 - Chemiluminescence analyser)	C
	Sulphur dioxide*	EA TGN M21 (QPAS/B/538 - NDIR analyser)	C

* The scale range of the analyser used for this test must be that detailed on its current MCERTS certificate or a range validated by the organisation to meet MCERTS requirements.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack Emissions to Atmosphere *Service Reference:* QE84 (cont'd)	<u>Sampling and On-Line Analysis</u> (cont'd)	National, European, International and Environment Agency specified standards including MIDs and documented in-house work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and DD CEN/TS 15675:2007/ BS EN 15259:2007	
	Nitrous oxide (N_2O)*	BS EN ISO 21258:2010 (QPAS/B/564 - NDIR analyser)	C
	Oxygen*	BS EN 14789:2005 (QPAS/B/538 - Validated paramagnetic analyser) (QPAS/B/538 - Validated zirconium cell analyser) (QPAS/B/538 - Validated electrochemical cell analyser)	C
	Total Gaseous Organic Carbon* (TOC / VOC) (0 to 1000 mg/m^3)	BS EN 12619:2013 (NPL method ref QPAS/B/538 - FID analyser)	C
	<u>Sampling and On-Line Analysis</u> Sampling and on-line analysis of gas phase chemicals from stacks, ducts and flues, including: carbon monoxide* nitrogen monoxide* sulphur dioxide* hydrogen chloride* water vapour* A controlled list of chemical species covered by this method is maintained by the laboratory.	Environmental Agency TGN M22: Measuring stack gas emissions using FTIR Instruments. Flexible scope to allow Measurement of additional gaseous components using documented procedure QPAS/B/541 and QPENV/B/110 and traceable reference standards.	A, C

* The scale range of the analyser used for this test must be that detailed on its current MCERTS certificate or a range validated by the organisation to meet MCERTS requirements.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ATMOSPHERIC POLLUTANTS AND EFFLUENTS – STACK GAS SAMPLES *Service Reference:* QE85-8015	<u>Chemical Tests</u>	Documented In-House Methods based on the following national, international and other recognised standards.	
MATERIALS FOR USE IN RADIOLOGICAL PROTECTION			
Attenuation properties of materials for use in radiological protection	Lead equivalence Attenuation 30 kV – 150 kV as specified in the standard <0.5 LE @ 50 kV	Documented in-house method in accordance with: EC BS 61331:2014 (and guidance document Determination of lead equivalent values according to IEC 61331-1:2014 — Report and short guidelines for testing laboratories, L. Büermann)	
END			

Accreditation for the purpose of Notified Body Activity taking into account EA2/17 and relevant requirements of ISO 17025:2005

Directive / Regulation	Conformity Assessment procedure/ Module/article	Category of products or individual products	Essential requirements: Product specification / Properties/Standards
The Construction Products Regulation (EU) No 305/2011	Testing Laboratory Attestation System 3	Thermal insulating products (1/2) : Thermal insulating products (factory-made products and products intended to be formed in-situ) (any)	EN 13162:2012+A1: 2015 EN 13163:2012+A1: 2015 EN 13164:2012+A1: 2015 EN 13165:2012+A2: 2016 EN 13166:2012+A2: 2016 EN 13167:2012+A1: 2015 EN 13168:2012+A1: 2015 EN 13169:2012+A1: 2015 EN 13170:2012+A1: 2015 EN 13171:2012+A1: 2015 EN 14303:2015 EN 14304:2015 EN 14305:2015 EN 14306:2015 EN 14307:2015 EN 14308:2015 EN 14309:2015 EN 14313:2015 EN 14314:2015 EN 15501:2015
The Construction Products Regulation (EU) No 305/2011	Testing Laboratory Attestation System 3	Thermal insulating products (2/2) : Thermal insulating products (factory-made products and products intended to be formed in-situ) (for uses subject to regulations on reaction to fire)	EN 13162:2012+A1: 2015 EN 13163:2012+A1: 2015 EN 13164:2012+A1: 2015 EN 13165:2012+A2: 2016 EN 13166:2012+A2: 2016 EN 13167:2012+A1: 2015 EN 13168:2012+A1: 2015 EN 13169:2012+A1: 2015 EN 13170:2012+A1: 2015 EN 13171:2012+A1: 2015 EN 14303:2015 EN 14304:2015 EN 14305:2015 EN 14306:2015 EN 14307:2015 EN 14308:2015 EN 14309:2015 EN 14313:2015 EN 14314:2015 EN 15501:2015

END