

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>0144 Accredited to ISO/IEC 17025:2005</p>	<h3>Castings Technology International Limited</h3> <p>Issue No: 054 Issue date: 07 March 2017</p>	
	<p>Advanced Manufacturing Park Brunel Way Rotherham South Yorkshire S60 5WG</p>	<p>Contact: Mr David Young Tel: +44 (0)114 2541144 Fax: +44 (0)114-2541155 E-Mail: d.young@castingstechnology.com Website: www.castingstechnology.com</p>
<p>Testing performed by the Organisation at the locations specified below</p>		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
<p>Address Advanced Manufacturing Park Brunel Way Rotherham South Yorkshire S60 5WG</p> <p>Local contact Mr D Young Tel: +44 (0)114-2541144 Fax: +44 (0)114-2541155</p>	<p>SUPPORT FUNCTIONS: Quality system Quality audit administration</p> <p>SAMPLING AND TESTING: ENGINEERING MATERIALS, MACHINERY, STRUCTURES & PRODUCTS Metals & weldments - chemical & physical Carbon/ sulphur/ oxygen/ nitrogen Elemental analysis Metallurgical</p> <p>ENVIRONMENTAL ENGINEERING Dynamic – Vibration</p> <p>ENVIRONMENTAL SAMPLES Particulates - Workplace & ambient atmospheric pollutants</p> <p>Local exhaust ventilation Stack Emissions Testing Physical Testing</p> <p>TESTING: METALS & WELDMENTS NDT (Radiography/Ultrasonic/Visual/ Dye Penetrant</p>	<p>A</p>



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Site activities performed away from the locations listed above:

Location details	Activity	Location code
Customer premises	ENVIRONMENTAL ENGINEERING Dynamic – Vibration Acoustic – Noise level measurement Dust/Fumes – Inhalable and respirable particulates Airborne Industrial pollutants - sampling Local Exhaust Ventilation – performance ENVIRONMENTAL SAMPLES Workplace & ambient atmospheric pollutants Local exhaust ventilation	B
Customer Sites requiring Stack Emissions Testing	Stack Emissions Testing	C



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS & WELDMENTS			
METALS and ALLOYS			
Steel castings	<u>Metallography</u>		
	Macroetch examination	Documented In-House Method OP002	A
	Microstructure examination	Documented In-House Method OP003	A
	Determination of surface features including fracture surfaces at magnifications of X10 to X2000	Documented In-House Method OP002 ASM Metals Handbook Vol. 11 9th Edition Customer reference documents	A
	Volume fraction manual point count method	ASTM E562-11	A
	Inclusion or Second-Phase Constituent Content of Metals by Automatic Image Analysis	ASTM E1245-03(08)	A
	Non-metallic Inclusion content	BS 7926:1998 (2014)	A
Steel castings	<u>Elemental Analysis</u>		
	Nitrogen, Oxygen and Hydrogen determination in Steels, Nickel based and Titanium	Documented In-House Method OP 040 using Eltra ONH 2000 inert gas fusion techniques	A
	Carbon and sulphur determination in steels, Nickel based and Titanium alloys	Documented In-House Method OP 040 using Eltra CS 800 inert gas fusion techniques	A
Plain carbon, low alloy and stainless steels Cast irons	Fe, C, Si, Mn, P, S, Cr, Mo, Ni, Al, As, B, Bi, Ca, Ce, Co, Cu, La, Mg, Nb, Pb, Sb, Sn, Ta, Ti, V, W, Zn, Zr, N ₂	Documented In-House Method OP 040 using Spectro Max optical emission spectrometry techniques	A



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METALS and ALLOYS (cont'd)	<u>Elemental Analysis (cont'd)</u>		
Aluminium base alloys	Al, Cu, Mg, Si, Fe, Mn, Ni, Zn, Pb, Sn, Ti, Cr, V, P, Ag, B, Sr, Zr, Mg, Ba, Be, Bi, Ca, Cd, Ce, Co, Ga, In, Li, Na, Sb	Documented In-House Method OP 040 using Spectro Max OES techniques	A
Titanium base alloys	Al, Cr, Cu, Fe, Mn, Mo, Nb, Ni, Pd, Si, Sn, Ti, V, Zr, C	Documented In-House Method OP 040 using Spectro Max OES techniques	A
Nickel Based Alloys	C, S, Al, B, Ca, Cr, Cu, Co, Fe, Mg, Mn, Mo, Ni, Nb, P, Si, Ta, Sn, Ti, W, V, Zr, Pb	Documented In-House Method OP 040 using Spectro Max OES techniques	A
Magnesium Based Alloys	Al, Zn, Mn, Si, Fe, Cu, Ni, Be, Ca, Cd, Ag, Ce, La, Nd, Pr, Th, Zr, Na, P, Pb, Sn, Mg, Gd	Documented In-House Method OP 040 using Spectro Max OES techniques	A
DENSE METALS	<u>Non-Destructive Tests</u>		
Castings, forgings and weldments	Ultrasonic	BS EN 12680-1:2003 Documented In-House method OP 440	A
	Radiography: X-ray up to 320keV	ASTM E94-93 Documented In-House Method OP 410	A
	Magnetic Particle Inspection	BS EN 9934-1:2015 ASTM E1444-12 ASTM E709-15 Documented In-House Method OP 430	A
	Colour contrast dye penetrant	BS EN ISO 3452:2013 ASTM E1417-13 ASTM E165-12 Documented In-House Method OP 420	A
	Fluorescent dye penetrant	BS EN ISO 3452:2013 ASTM E1417-13 ASTM E165-12 Documented In-House Method OP 420	A



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WORKPLACE & AMBIENT AIR MONITORING DUST, FUME and GASES - AIRBORNE	<u>Analysis of :</u>		
	Total and Respirable Aerosols	Documented In-House Method OP 362 based on MDHS 14/4 by Gravimetric techniques	A
	Respirable Silica	Documented In-House Method OP 363 based on MDHS 101 by FTIR techniques	A
	<u>Sampling and on site analysis:</u>		
	Gases and vapours using diffusive monitors	Documented In-House Method OP 320 based on MDHS 70 (withdrawn)	A & B
	<u>Sampling with subsequent analysis at an ISO/IEC 17025 accredited laboratory:</u>		
	Respirable Aerosols	Documented In-House Method OP 319 based on MDHS 14/4	A & B
	Thoracic Aerosols	Documented In-House Method OP 394 based on MDHS 14/4	A & B
	Organic Isocyanates	Documented In-House Method OP 321 based on MDHS25/4	A & B
	Gases and vapours using sorbent tubes	Documented In-House Method OP 322 based on MDHS 72 and MDHS 96	A & B
Inhalable Aerosols	Documented In-House Method OP 326 based on MDHS 14/4	A & B	
Machine-made fibres	Documented In-House Method OP 327 based on MDHS 59/2	A & B	
Gases and vapours using passive sampling badges	Documented In-House Method OP 330 based on MDHS 88 and MDHS 102	A & B	



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<p>ACOUSTIC TESTING</p> <p>Industrial premises and other workplaces</p> <p>Industrial premises and other workplaces</p>	<p><u>Measurement of noise:</u></p> <p>Personal noise exposure</p> <p>Environmental noise levels</p>	<p>Documented In-House Methods OP 328 and OP 329 based on L108 Guidance on the Control of Noise at Work Regulations 2005.</p> <p>Documented In-House Method OP 313</p>	<p>A & B</p> <p>A & B</p>
<p>WORKPLACE EQUIPMENT</p> <p>Local Exhaust Ventilation</p>	<p><u>Health and Hygiene Tests</u></p> <p>Hand and arm vibration measurements (Hand grip only)</p> <p>Performance tests - Air velocity, pressure & volume</p>	<p>BS EN ISO 5349-1:2001 BS EN ISO 5349-2:2002 BS EN ISO 5349-1:2001 +A1:2015 Documented In-House Method OP 306</p> <p>Documented In-House Method OP 323 based on HSG258:2011 guidance on local exhaust ventilation</p>	<p>A & B</p> <p>A & B</p>
<p>STACK EMISSION MONITORING</p> <p>Filter Papers and rinse solutions</p>	<p><u>Physical Testing – Analysis of stack emission samples</u></p> <p>Weighing of Particulate Matter</p>	<p>BS EN 13284-1:2002 Documented In-House Method OP 361</p>	<p>A</p>



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Testing of Stack Emissions to Atmosphere	<u>Sampling with subsequent analysis at an ISO/IEC 17025 accredited laboratory</u>	National, International and other recognised standards using documented In-House work instructions to meet the requirements of DD CEN/TS 15675:2007 / BS EN 15259:2007	
	Nitric acid vapours and oxides of nitrogen (wet extractive)	Based on the procedural requirements of US EPA Method 7C and 7D Documented In-House Method OP 365	C
	Hydrogen Chloride	US EPA Method 26 & 26A Documented In-House Method OP 368	C
	Metals (Particulate phase only)	BS EN 13284-1:2002 BS ISO 9096:2003 Documented In-House Methods OP 336, OP 361	C
Testing of Stack Emissions to Atmosphere (cont'd)	<u>Sampling with subsequent analysis at an ISO/IEC 17025 accredited laboratory (cont'd)</u>	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	
	Total Particulate Matter	BS EN 13284-1:2002 Documented In-House Methods DOP 336, 361	C
	Hydrogen Chloride	BS EN 1911-1:2010 Documented In-House Method OP342	C
	Hydrogen Fluoride	BS ISO 15713:2006 Documented In-House Method OP 341	C



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Testing of Stack Emissions to Atmosphere (cont'd)	<u>Sampling with subsequent analysis at an ISO/IEC 17025 accredited laboratory (cont'd)</u>	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	
	Halides and Halogens: Hydrogen Bromide Chlorine Bromine	US EPA Method 26A Documented In-House Method OP 368	C
	Halides and Halogens: Hydrogen Bromide Chlorine Bromine	US EPA Method 26 Documented In-House Method OP 368	C
	Nitric acid vapours and oxides of nitrogen (wet extractive)	US EPA Method 7C and 7D Documented In-House Method OP 365	C
	Sulphur dioxide	BS EN 14791 :2005 Documented In-House Method OP 345	C
	Ammonia	BS EN 14791 :2005 Documented In-House Method OP 345	C
	Metals	BS EN 14385:2004 Documented In-House Method OP 369	C
	Mercury	BS EN 13211:2001 Documented In-House Method OP 369	C
Dioxins & Furans	BS EN 1948-1:2006 Documented In-House Method OP 366	C	



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Testing of Stack Emissions to Atmosphere (cont'd)	<u>Sampling with subsequent analysis at an ISO/IEC 17025 accredited laboratory (cont'd)</u>	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	
	Dioxin-like Polychlorinated Biphenyls (PCBs)	BS EN 1948-4:2010 Documented In-House Method OP 366	C
	Polycyclic aromatic hydrocarbons	BS ISO 11338-1:2003 Documented In-House Method OP 366	C
	Speciated VOCs (carbon and other suitable tubes) (Direct Sampling of dry stacks only): Amines and Amides Phenols Cresols Carboxylic Acids Aldehydes	PD CEN/TS 13649:2014 Documented In-House Method OP 340	C
	<u>Sampling and On-Site analysis</u>		
	Water Vapour	BS EN 14790:2005 Documented In-House Method OP 334	C
	<u>Sampling and On-Line analysis</u>		
Pressure, Temperature and Velocity (Point Velocity Method)	BS EN 16911-1:2013 (Method OP333 using differential pressure device (pitot tube) method)	C	



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Testing of Stack Emissions to Atmosphere (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	
	Pressure, Temperature and Velocity (Point Velocity Method)	BS EN 16911-1:2013 (excluding specific requirements and guidance in MID 116911-1) (Method OP333 using differential pressure device (pitot tube) method)	C
	Carbon Dioxide*	ISO 12039:2001 Documented In-House Method OP 370 (NDIR analyser)	C
	Nitrogen Monoxide (NO)*	BS EN 14792:2005 Documented In-House Method OP 370 (Chemiluminescence analyser)	C
	Oxides of Nitrogen (NOx)*	BS EN 14792:2005 Documented In-House Method OP 370 (Chemiluminescence analyser)	C
	Oxygen*	BS EN 14789:2005 Documented In-House Method OP 370 (Zirconium cell or paramagnetic analyser)	C
	Carbon Monoxide*	BS EN 15058:2006 Documented In-House Method OP 370 (NDIR analyser)	C



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Testing of Stack Emissions to Atmosphere (cont'd)	<u>Sampling and On-Line analysis</u> (cont'd) Total Gaseous Organic Carbon* (TOC/VOC) (0 to 1000 mg/m ³) Tests limited to dry stacks only	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 BS EN 12619:2013 Documented In-House Method OP 338 (FID analyser)	C
END			

* - 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