

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <b>0136</b>  Accredited to <b>ISO/IEC 17025:2017</b>	<b>Element Materials Technology Sheffield Ltd, Trading as Element Materials Technology Sheffield – Magna Way</b>	
	<b>Issue No: 055</b>	<b>Issue date: 19 June 2020</b>
<b>3 Ignite Magna Way Rotherham South Yorkshire S60 1FD</b>	<b>Contact: Dr Stuart Read Tel: +44 (0) 7554 328412 Fax: +44 (0)114 723 248 E-Mail: info.sheffield@element.com Website: www.element.com</b>	
<b>Testing performed by the Organisation at the locations specified below</b>		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code
<b>Address</b> 3 Ignite Magna Way Rotherham South Yorkshire S60 1FD  <b>Local contact</b> Dr Stuart Read  Tel: +44 (0)7554 328412 Fax: +44 (0)114 723 248 E-Mail: stuart.read@element.com Website: www.element.com	Mechanical testing Elemental analysis Metallurgical tests Corrosion testing Dimensional measurements	A
<b>Address</b> Temple Close Magna 34 Rotherham South Yorkshire S60 1FH  <b>Local Contact</b> Dr Stuart Read  Tel: +44 (0)7554 328412 Fax: +44 (0)114 723 248 E-Mail: stuart.read@element.com Website: www.element.com	Non Destructive Testing	C

#### Site activities performed away from the locations listed above:

Location details	Activity	Location code
Any suitable customer site	Alloy categorisation	B



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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
<b>METALS, ALLOYS and METAL PRODUCTS</b>	<u>Chemical Tests</u>		
Cast iron, Ferrous alloys, High speed tool steel, Stainless steels	C, Si, Mn, P, S, Cr, Mo, Ni, Al, Cu, B, Co, Pb, Ti, V, Nb, W, Sn, Mg, Zr, N	Documented In-House Methods OES MAX1, ICP 6000 and Combustion CS844 using spark OES, ICP-OES, Combustion & Fusion techniques	A
Aluminium alloys	Cu, Si, Mn, Cr, Ni, Bi, Cd, Pb, Mg, Sn, Ti, V, Zn, Fe, Zr	Documented In-House Methods OES MAX1 and ICP6000 using spark OES and ICP-OES techniques	A
Cobalt alloys	C, Si, Mn, P, S, Cr, Ni, Mo, Fe, W, Al, Sn, Ti, B, Co, Cu	Documented In-House Methods OES MAX1 and ICP6000 using spark OES and ICP-OES techniques and CS844 using Combustion	A
Copper alloys	Si, Mn, P, S, C, Cr, Ni, Al, Bi, Cd, Sb, Cu, Pb, Mg, Sn, Be, Zn, Ag, Fe, B	Documented In-House Methods OES MAX1, ICP 6000 and Combustion CS844 using spark OES, ICP-OES, Combustion & Fusion techniques	A
Nickel alloys	C, Si, Mn, Ta, P, S, Cr, Mo, Ni, Al, Co, Cu, Pb, Ti, W, V, Nb, Fe	Documented In-House Methods OES MAX1, ICP 6000 and Combustion CS844 using spark OES, ICP-OES, Combustion & Fusion techniques	A
Titanium alloys	Ti, C, V, Al, Fe, Mg, Mn, Zr, Mo, Si, Sn, Cu	Documented In-House Methods OES MAX1, ICP 6000 and Combustion CS844 using spark OES, ICP-OES, Combustion & Fusion techniques	A



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METALS, ALLOYS and METAL PRODUCTS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Tungsten Carbides	C	Documented In-House Method CS844 Combustion Technique	A
White Metals (Lead, Tin and Zinc alloys)	Mn, Ni, Pb, Bi, Sb, Fe, Cu, Al, Sn, Zn	Documented In-House Method ICP6000 using ICP-OES technique	A
Ferrous alloys and stainless steels, Cu alloy, Co alloy, Ni alloy & Ti alloy	Hydrogen, Nitrogen and Oxygen	Documented In-House Method ONH836 using fusion technique	A
Steel, stainless steel, Nickel alloy, Cobalt alloy, Titanium alloy, and Aluminium alloy	Categorisation of alloys	Documented In-House Method XRF 1 using Niton XLt 898P XRF analyser	A, B
	<u>Corrosion Tests</u>		
Iron, Steels and other ferrous metals	Intergranular corrosion	BS EN ISO 3651-2:1998 ASTM A262-15 Methods A, C & E ASTM G28-02(2015) Method A	A
	Pitting corrosion	ASTM G48-11(2015) Method A	A
	<u>Mechanical Tests</u>		
	Bend	BS EN ISO 7438:2016	A
	Compression (temperature - ambient) (forces from 0.4 kN to 2000 kN)	Documented In-House Methods MTP12	A
	Impact: Izod Charpy (V- notch) (temperatures -196°C to ambient)	BS 131-1:1961(2015) BS EN ISO 148-1:2016 ASTM E23-18	A



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METALS, ALLOYS and METAL PRODUCTS (cont'd)	<u>Mechanical Tests</u>		
	Hardness: Brinell (10/3000, 10/1000, 5/750)	BS EN ISO 6506-1:2014 ASTM E10-18	A
	Rockwell (Scales B & C)	BS EN ISO 6508-1:2016 ASTM E18-19	A
	Vickers (0.3, 0.5, 1.0, 10 & 30 kg)	BS EN ISO 6507-1:2018 ASTM E92-17 ASTM E384-17 Documented In-House Method MET 5	A
	Stress-rupture (forces from 1.5 kN (330lbs) to 45 kN (10,000lbs)) (ambient temperature to 950°C)	BS EN 2002-005:2007 BS EN ISO 204:2018 ASTM E139-11 (2018) ASTM E292-18	A
	Tensile: (temperature - ambient) (forces from 0.2 kN to 250 kN)	BS EN ISO 6892-1:2019 BS EN 2002-1:2005 BS 4A4-1:Section 1:1966 (withdrawn) ASTM A370-19 <sup>e1</sup> ASTM E8/E8M-16a	A
	Tensile: (Elevated temperature from ambient to 950°C) (forces from 0.2 kN to 250 kN)	BS EN ISO 6892-2:2018 BS EN 2002-2:2005 ASTM E21-17 <sup>e1</sup>	A
Proof and Tensile strength (temperature - ambient) (forces from 0.2 kN - 2000 kN)	Documented In-House Method MTP2	A	



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METALS, ALLOYS and METAL PRODUCTS (cont'd)	<u>Mechanical Tests</u>		
Bolts, screws and nut	Tension and compression	To documented plans agreed with clients. BS 4882:1990(2017) Appendix D BS EN ISO 898-1:2013 BS EN ISO 898-2:2012 BS EN ISO 3506-1:2009 (Excluding clause 7.2.5) BS EN ISO 3506-2:2009 BS 3692:2014 (nuts) ASTM A194/A194M-18 ASTM A370-19 <sup>e1</sup> ASTM F606/F606M-16 SAE J429: 99 NES 862 Part 3 NES 862 Part 5	A
Chains, chain slings, rings, links, hooks, shackles, swivels, eye-bolts and pulley blocks	Proof load (forces from 0.4kN to 2000 kN)	Lifting operations and lifting equipment regulations 1998	A
Metal Scaffolding Couplers	Friction type sleeve couplers - bending moment	BS EN 74-1:2005	
	Right angle couplers - rotation, cruciform bending moment and stiffness, pull apart force, and indentation test	BS EN 74-1:2005	A
	Failure force for right angle and swivel couplers	BS EN 74-1:2005	A
	Slippage force for right angle, swivel and sleeve couplers	BS EN 74-1:2005	A
	Slippage force for Putlog couplers	BS 1139-2.2:2009+A1:2015	A



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METALS, ALLOYS and METAL PRODUCTS (cont'd)	<u>Metallurgical Tests</u>		
Austenitic stainless steels	Case depth Decarburised depth	BS 6286:1982(2005) BS EN ISO 2639:2002 ISO 3754:1976 Documented In-House Method MET1	A
	Macroscopic determination of grain flow	Documented In-House Method MET3	A
	Grain size	ASTM E112-13	A
	Identification and counting of inclusions	ASTM E45-18a Documented In-House Methods MET2	A
	<u>Mechanical Tests</u>		
Weldments and brazings	Tests designated in specified welding codes as detailed below  Bend, Fracture, Hardness, Impact, Tensile, Micro and Macro-examination tests in accordance with specified welding and brazing codes	BS 4871-3:1985 (withdrawn) BS 4872-1:1982(2018) BS 4872-2:1976(2018) BS EN 287-1:2011 (Withdrawn) BS EN ISO 9606-2:2004(2019) BS EN ISO 15614-1:2017 BS EN ISO 15614-2:2005(2014) BS EN ISO 15614-8:2016 BS EN ISO 4136:2012(2018) BS EN ISO 5173:2010+A1:2011 BS EN ISO 5178:2019 BS EN ISO 9015-1:2011 BS EN ISO 9015-2:2016 BS EN ISO 9016:2012 BS EN ISO 9017 :2018 BS EN 17639 :2013 BS 2633:1987(2016) PD 5500:2015+A1 ASME IX-2019 DGQA Inspection Instruction AVP 84 and technically equivalent specifications	A



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METALS, ALLOYS and METAL PRODUCTS (cont'd)			
Steel tubes	<u>Physical Tests</u>  Dimensional assessment	BS EN 39:2001 Documented In-House Method MTP19	A
Machinery & mechanical devices Engineering Components & tools (dimensional)	<u>Mechanical Tests</u>  General dimensional measurements with a best measurement capability (uncertainty) of:  Length up to 1000 x 750 x 500 mm - 0.8 + (3 x length in metres) micrometres	Documented In-House Method MTP21 and associated customer drawings and specifications	A
Machinery & mechanical devices Engineering Components & tools (dimensional) (cont'd)	General dimensional measurements with a best measurement capability (uncertainty) of: (cont'd)  Diameter from 1 up to 400 mm - 2.5 micrometres	Documented In-House Method MTP21 and associated customer drawings and specifications(cont'd)	A
LIGHT and DENSE METALS and ALLOYS including castings, forgings and weldments	<u>Non Destructive Testing</u>  Liquid Penetrant Method Fluorescent - in line Colour contrast - manual application	BS M39:1972(1998) BS EN ISO 3452-1:2013 (amd 2014) BS EN 10228-2:2016 ASME V-2017 RRP 58003 Rev J API 6A:20th Edition	C



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LIGHT and DENSE METALS and ALLOYS including castings, forgings and weldments (cont'd)	<u>Non Destructive Testing</u> (cont'd)		
	Ultrasonic Flaw Detection (Manual contact)	BS M36:1970 (1984) BS 3923-1:1986(Withdrawn) BS 4124:1991(Withdrawn) BS EN 1714:1998 (Withdrawn) BS EN ISO 17640:2017 BS EN 10160:1999 (Withdrawn) BS EN 10228-3:2016 BS EN 10228-4:2016 BS EN 12680-1:2003 ASME V-2017 MIL-STD-2154 (1982)(Withdrawn) AMS-STD-2154:2012 rec C 2017 ASTM A388/A338M-18 API 6A:20 <sup>th</sup> Edition BS EN 10308:2002	C
	Ultrasonic Flaw Detection (Immersion technique)	BS M36:1970(1984) BS 4124:1991 (Withdrawn) BS EN 10160:1999 BS EN 10228:Part 3:1998 BS EN 10228:Part 4:1999 BS EN 12680-1:2003 ASME V-2017 RRP 58001 Rev C MIL-STD-2154(1982)(Withdrawn) AMS-STD-2154:Rev C 2017	C
FERROMAGNETIC METALS	Magnetic Particle: Black ink - universal and portable kit Fluorescent ink - universal and portable kit (AC and DC up to 3000 A)	BS EN 1290:1998 (Withdrawn) BS EN 10228-1:2016 BS EN ISO 9934-1:2016 API 6A:20 <sup>th</sup> Edition BS 6072:1981(1986) BS 5138:1974(1988) ASME V-2017 RRP 58004 Rev G BS EN ISO 17638:2016	C

END