

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>Accredited to ISO/IEC 17025:2017</p>	Keighley Laboratories Ltd Issue No: 050 Issue date: 01 July 2024	
	Croft House South Street Keighley West Yorkshire BD21 1EG	Contact: Mrs D Mellor Tel: +44 (0)1535-664211 Fax: +44 (0)1535-680604 E-Mail: debbie@keighleylabs.co.uk Website: www.keighleylabs.co.uk
Testing performed at the above address only		

DETAIL OF ACCREDITATION

Keighley Laboratories Ltd, UKAS reference 0034, is accredited for flexible scope enabling new versions of existing accredited standard test methods and technically equivalent standard methods to be introduced in accordance with documented in-house procedure QP 200.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
METALS, ALLOYS and METAL PRODUCTS Plain carbon, low and high alloy steels and stainless steels Nickel and Cobalt Alloys	<u>Chemical Tests</u>	
	Al, As, Cr, Co, Cu, Mg, Mn, Mo, Nb, Ni, P, Pb, Si, Sn, Ta, Ti, V, W,	Documented In-House Methods CL 200.3, CL 200.8, CL 200.9, CL 200.15, CL300.3, CL300.8, CL300.9 and CL300.15 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
	Si	Documented In-House Methods CL 034 Gravimetric
	Ni	Documented In-House Methods CL 037 Gravimetric
	Cr	Documented In-House Methods CL 038 Volumetric
	Al, B, Co, Cr, Cu, Fe, Mg, Mn, Mo, Nb, Ni, P, Si, Ta, Ti, V, W, Zr	Documented In-House Methods CL200.11 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
	Cr	Documented In-House Methods CL 038 Volumetric
	Ni	Documented In-House Methods CL 037 Gravimetric



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
<p>METALS, ALLOYS and METAL PRODUCTS (cont'd)</p> <p>Copper Alloys</p>	<p><u>Chemical Tests (cont'd)</u></p> <p>Ag, As, Al, B, Be, Bi, Cd, Co, Cr, Fe, Mg, Mn, Ni, P, Pb Sb, Se, Si, Sn, Te, Zn, Zr</p> <p>Cu</p> <p>Cu</p> <p>Ag, As, Al, Bi, Cd, , , Fe, Mg, Mn, Ni, Pb, Sb, Se, Sn, Te, Zn, Si</p> <p>P</p>	<p>Documented In-House Methods CL200.18 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)</p> <p>Documented In-House Methods CL 082 Volumetric</p> <p>Documented In-House Methods CL 083 Electrolytic</p> <p>Documented In-House Method CL 125 Atomic Absorption Spectroscopy</p> <p>Documented In-House Methods CL 085 Photometric</p>



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Zinc Alloys	Al, Bi, Cd, Cu, Fe, In, Mg, Mn, Ni, Pb, Si, Sn, Th, Tl	Documented In-House Methods CL200.4, CL200.5, CL 200.6, CL300.4, CL300.5 and CL300.6 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
Aluminium Alloys	Be, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn Sr, Ti, Zn, Zr	Documented In-House Methods CL 200.1, CL 200.10, CL300.1 and CL300.10 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
	Si	Documented In-House Methods CL 070 Gravimetric
Titanium Alloys	Al, Fe, Mo, Y, V,	Documented In-House Method CL 200.20 Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
Plain carbon, low and high alloy steels, Stainless steels, Copper alloys and Nickel alloys	Carbon and Sulphur	Documented In-House Methods CL 028 & IR/Combustion
Iron based, Nickel based and Titanium alloys	Oxygen, Hydrogen and Nitrogen	Documented In-House Method CL061 using Inert Gas Fusion



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Copper Alloys	Oxygen	Documented In-House Method CL061 using Inert Gas Fusion
Steels, Aluminium, Copper, Titanium and Nickel alloys	Categorisation of alloys	Documented In-House Method MT562 Niton XLT 980 GOLDD - 94210
METALS, ALLOYS and METAL PRODUCTS	<u>Corrosion Tests</u>	Flexible scope enabling new versions of existing accredited standard test methods and technically equivalent standard methods to be introduced in accordance with QP 200.
Stainless Steels, Plated, Painted or Coated test panels and Components	Corrosion tests in artificial atmospheres (Salt spray)	BS EN ISO 9227 BS EN 60068-2-11 BS 3900:Pt F4 BS 3900:Pt F12:1997 (Withdrawn) ASTM B117 ASTM G85Appendix 5 FORD EU B1 103-1 (April 1985) NISSAN MO 140 (1985)
Austenitic Stainless Steels Heat-resisting Alloys	Ferric chloride pitting test	ASTM G48 Method A ASTM A923Method C
	Ferric sulphate/sulphuric acid	ASTM G28Method A
	Money penny Strauss test	BS 5903:1980 (Withdrawn) ASTM A262Practice E BCAR A8-10 CI 4.22 BAe R05 4534
	Streicher test	ASTM A262Practice B
	Susceptibility to intergranular attack	BS EN ISO 3651-2Method A
Paints and organic coatings	Humidity	BS 3900:Part F2 ASTM D2247



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Ferrous and Non-ferrous Metals and Alloys	Proof Loading Compression Testing Tensile at ambient temperature (forces up to 1100 kN) Impact: Charpy (-196°C and -101°C to ambient temperature) 'V' and 'U' notch Izod Crystallinity Brinell Hardness (5/750 & 10/3000) Brinell Hardness (portable) Comparative method Vickers Hardness (HV0.1, HV0.3, HV0.5, HV1.0, HV5, HV10 & HV30) Rockwell Hardness (HRC, HRBW, HRA, HR15N & HR30N) Bend Shear	Documented In-house Method MT421 ASTM E9 BS 4A.4 Part 1 Section1:1966 (Withdrawn) BS EN 2002-1 BS EN ISO 6892-1 ASTM E8/E8M ASTM A370 ASTM B557M BS EN ISO 148-1 ASTM E23 ASTM A370 BS 131 Part 1 BS 131:Part 5 BS EN ISO 6506-1 ASTM E10 ASTM A370 Documented In-House Method MT 310 BS EN ISO 6507-1 ASTM E92 BS EN ISO 6508-1 ASTM E18 BS EN ISO 7438 ASTM E290 BS EN 28749



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Bolts, Screws and Nuts	Proof loading Tensile Strength under wedge loading	BS 4395-1:1969(Withdrawn) BS 4395-2:1969(Withdrawn) BS EN ISO 898-1 BS EN 20898-2:1994 (Withdrawn) BS EN ISO 3506-1 Documented In House Method MT 421
Tubular Products	Flattening <u>Metallurgical Tests</u>	BS EN ISO 8492
Ferrous and Non-ferrous Metals and Alloys	Carburised and surface hardened case depths Decarburisation Metallic & oxide coating thickness Inclusion content Grain size - comparative method	BS 6286 BS 6481:1984(Withdrawn) BS EN ISO 2639 BS EN ISO 18203:2016 BS EN ISO 3887 Microscopic method ASTM E1077 Micro hardness method BS EN ISO 1463 BS EN ISO 2064 ASTM B487 ASTM E45Methods A & D ASTM E112



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Ferrous and Non-ferrous Metals and Alloys (cont'd)	Volume Fraction Manual point count method	Documented In-House Method MT 424 ASTM E562 BS 7590 AMS 2315G
	Graphite in Iron castings	ASTM A247 BS EN ISO 945-1
	Microstructural evaluation	Documented In-House Method MT 404 API 6A718 2 nd Edition
	Macrostructural evaluation	Documented In-House Method MT 404
Surface evaluation for machining damage	Resulting from machining operations(including, but not restricted to- laser, Electron beam, EDM, ECM & grinding)	Documented In-House Method MT 423
Steel, titanium & titanium alloy fasteners	Metallurgical examination (Grain flow and thread rolling checks)	BAe R25-0498 BAe ABP 2-2333 Documented In-House Method MT422
Aluminium alloys and Clad Aluminium Alloys	Metallurgical examination - High Temperature Induced Porosity (HTO) - Eutectic Melting - Intergranular Corrosion - Diffusion in the Cladding	AMS 2772E Section 4.4 ASTM G110 Shorts P Specification 401 Issue 9 McDonnell Douglas HP 1-2 Section 4 (Rev R) Documented In-House Method MT 416
METALS, ALLOYS and METAL PRODUCTS	Relative Magnetic Permeability Comparative method only on feebly magnetic materials using Ferromaster permeability meter or Comparator beam meter	Documented In-House Method MT 552



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WELDMENTS	Test designated in specified welding codes, as detailed below - Bend, Fracture, Hardness, Impact, Tensile, Visual examination, Macro and Micro-examination	BS EN 287:Part 1:2011(Current/Superseded) BS 4870:Part 4:1988(Withdrawn) BS 4871:Part 3:1985(Withdrawn) BS 4872:Part 1 BS 4872:Part 2 BS EN 13530-2 BS EN ISO 9606-1 BS EN ISO 9606-2 BS EN ISO 15614-1 BS EN ISO 15614-2 BS EN ISO 15614-8 BS EN ISO 9016 BS EN ISO 5178 BS EN ISO 4136 BS EN ISO 5173+A1 BS EN ISO 9015-1 BS EN ISO 9017 BS EN ISO 17637 BS EN ISO 17639 BS ISO 24394 AVP 84,D505 Airbus UK ABP2-4099 Airbus UK ABP2-4100 Airbus UK ABP2-4355 BAe R05-6116 BAe R05-6118 BAEP 4534 BCAR A8-10 IAA P4 (Clauses 4 & 5 only) RPS 912 ASME IX AWS D17.1



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<p>METALS, ALLOYS and METAL PRODUCTS (cont'd)</p> <p>Weldments, Castings and Wrought Ferrous Metals and Alloys</p>	<p><u>Non-Destructive Tests</u></p> <p>Magnetic Particle Colour contrast and fluorescent</p> <p>Liquid Penetrant Colour contrast and fluorescent</p> <p>Ultrasonic Flaw Detection Manual Contact Method</p> <p>Ultrasonic thickness monitoring, (range 1.2 mm to 200 mm)</p>	<p>BS 6072:1981 (partially replaced) BS EN ISO 17638:2016 BS EN 10228- 1:2016 BS EN ISO 9934-1: 2016 ASME V:2019 ASTM E709-15</p> <p>BS EN ISO 3452-1:2013 BS EN 10228-2:2016 BS M39:1972 (2009) ASME V:2019 ASTM E165/E165M-18</p> <p>BS 6208:1990 (withdrawn) BS EN 1714:1998(2003) (Withdrawn) BS EN 10160:1999 BS EN 10228-3:2016 BS EN 10228-4:2016 BS EN 12680-1: 2003 BS EN 12680-2: 2003 BS EN 12680-3:2011 BS EN ISO 17640:2018 BS EN 10308:2002 ASME V:2019</p> <p>Documented In-House Method MT551</p>
END		