Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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Accredited to ISO/IEC 17025:2017

Keighley Laboratories Ltd

Issue No: 050 **Issue date:** 01 July 2024

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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	<u>Chemical Tests</u>	
Plain carbon, low and high alloy steels and stainless steels	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
Nickel and Cobalt Alloys	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

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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
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
	Moneypenny 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

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	Tensile at ambient temperature (forces up to 1100 kN)	BS 4A.4 Part 1 Section1:1966 (Withdrawn) BS EN 2002-1 BS EN ISO 6892-1 ASTM E8/E8M ASTM A370 ASTM B557M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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
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	BS EN ISO 8492
	<u>Metallurgical Tests</u>	
Ferrous and Non-ferrous Metals and Alloys	Carburised and surface hardened case depths	BS 6286 BS 6481:1984(Withdrawn) BS EN ISO 2639 BS EN ISO 18203:2016
	Decarburisation	BS EN ISO 3887 Microscopic method ASTM E1077 Micro hardness method
	Metallic & oxide coating thickness	BS EN ISO 1463 BS EN ISO 2064 ASTM B487
	Inclusion content	ASTM E45Methods A & D
	Grain size - comparative method	ASTM E112

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
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 2nd 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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
METALS, ALLOYS and METAL PRODUCTS (cont'd)	Non-Destructive Tests	
Weldments, Castings and Wrought Ferrous Metals and Alloys	Magnetic Particle Colour contrast and fluorescent	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
	Liquid Penetrant Colour contrast and fluorescent	BS EN ISO 3452-1:2013 BS EN 10228-2:2016 BS M39:1972 (2009) ASME V:2019 ASTM E165/E165M-18
	Ultrasonic Flaw Detection Manual Contact Method	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
	Ultrasonic thickness monitoring, (range 1.2 mm to 200 mm)	Documented In-House Method MT551
END		