Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0366

Accredited to ISO/IEC 17025:2017

Rotech Laboratories Ltd

Issue No: 040 **Issue date:** 22 June 2020

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Testing performed by the Organisation at the locations specified

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address Rotech Laboratories Ltd Western Way Wednesbury WS10 7BG **Local contact** Mr Philip Raybould	Testing Chemical tests Corrosion tests Mechanical tests Metallurgical tests Weldment Tests	A
Address Rotech Laboratories Ltd Linley Lodge Laboratory Westgate Aldridge Walsall WS9 8DG **Local contact** Mr Philip Raybould	Testing Corrosion tests Mechanical tests Metallurgical tests Weldment Tests	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
METALS, ALLOYS and METAL PRODUCTS	Chemical Tests		
Aluminium alloys	Elemental analysis Si, Fe, Mn, Cu, Mg, Zn, Cr, Pb, Sn, Ti	Documented In-House Method RP101 using Optical Emission Spectroscopy	A
Aluminium alloys (Wrought)	Elemental analysis Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Pb, Sn, Zr, V, Ga, Bi	Documented In-House Methods RP116 & RP117 using ICP-OES	A
Ferrous Based Alloys	Elemental analysis Mn, Si, P, Cu, Ni, Cr, Mo, V, Ti, Al, Nb, B	Documented In-House Methods RP116 & RP-117 using ICP-OES	A
Ferrous Based Alloys	Elemental analysis C, Mn, Si, S, P, Cu, Ni, Cr, Mo, Sn, Nb, V, Al, Ti, B, Zr, Pb, W, Co, Mg, N	Documented In-House Method RP101 using Optical Emission Spectroscopy	A
Nickel Alloys	Elemental analysis C, Si, Mn, P, S, Cr, Mo, Ni, Al, Co, Cu, B, Ti, W, V, Nb, Fe, Ta, Zr	Documented In-House Method RP101 using Optical Emission Spectroscopy	A
	Determination of Carbon and Sulphur	Documented In-House Method RP138	A
Cast iron, copper alloys, ferro alloys, high alloyed steels, low alloyed steels, nickel and cobalt alloys, plain carbon steels and refractories	Qualitative and Semi-Quantitative analysis of elements above atomic No.5	Documented In-House Method RP362 using Energy Dispersive Spectroscopy	A
High alloyed steels, low alloyed steels, nickel and cobalt alloys, plain carbon steels.	Determination of Nitrogen	Documented In-House Method RP136	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS and METAL PRODUCTS (cont'd)	Corrosion Tests		
Austenitic stainless steels	Susceptibility to intergranular corrosion	BS EN ISO 3651-2:1998 Method A ASTM A262-15 Practice A, C & E	A
Stainless Steels & related alloys	Pitting and Crevice Corrosion	ASTM G48-11(15) Method A	A
Wrought nickel rich chromium bearing alloys	Susceptibility to intergranular corrosion	ASTM G28-02(15) Method A	A
Austenitic stainless steels	Susceptibility to intergranular corrosion	ASTM A262-15 Practice E	B
Stainless Steels & related alloys	Pitting and Crevice Corrosion	ASTM G48-11(15) Method A	B
	Mechanical Tests		
	Bend	BS EN ISO 7438:2016	A, B
	Hardness:		
	Brinell (5/750, 10/3000)	BS EN ISO 6506-1:2014 ASTM E10:18	A
	Rockwell Scales B & C	BS EN ISO 6508-1:2016 ASTM E18-19	A, B
	Vickers HV5, HV10	BS EN ISO 6507-1:2018 ASTM E92-17	A
	Vickers HV1, HV5, HV10	BS EN ISO 6507-1:2018 ASTM E92-17	B
	Low Force Vickers HV0.3, 0.5 and 1	BS EN ISO 6507-1:2018	A
	Micro Hardness HV 0.10	ASTM E384-17	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS and METAL PRODUCTS (cont'd)	Mechanical Tests (cont'd)		
	Impact:		
	Izod	BS 131:Part 1:1961(2015)	A
	Charpy (V-notch) (-196°C and -140°C to ambient) Including %Shear and Lateral Expansion	BS EN ISO 148-1:2016 ASTM A370-19^{e1} ASTM E23-18 ASTM A923:2014 Method B	A
	Charpy (V-notch) (-196°C and -140°C to ambient) Including %Shear and Lateral Expansion	ASTM A370-19^{e1} ASTM E23-18 ASTM A923:2014 Method B	B
	Crystallinity	BS 131:Part 5:1965(2015)	A
	Tensile (Ambient temperature, forces from 2 kN to 600 kN)	BS EN ISO 6892-1:2016 Methods A & B BS EN 2002-1:2005 ASTM E8/8M-16a ASTM A370-19^{e1} ASTM B557/B557M-15	A
	Tensile (Ambient temperature, forces from 2 kN to 600 kN)	BS EN ISO 6892-1:2016 Methods A & B ASTM E8/8M-16a ASTM A370-19^{e1}	B
	Tensile (temperature from ambient to 600°C, forces from 2 kN to 100 kN)	BS EN ISO 6892-2:2011 Method A ASTM E21-17^{e1}	A
Pipes and tubes	Crush, Flattening and Expanding	BS EN ISO 8492:2013 BS EN ISO 8493:2004 BS EN ISO 8495:2013 BS 6323:Part 1:1982(1990) (Superseded) ASTM A370-19^{e1}	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS and METAL PRODUCTS (cont'd)	Mechanical Tests (cont'd)		
Fasteners (Including Bolts, Screws and Nuts)	Proof Load and Tension	BS 4395:Part 1:1969 (withdrawn) BS 4395:Part 2:1969 (withdrawn) BS EN ISO 898-1:2013 BS EN ISO 898-2:2012 BS EN ISO 898-6:1996 (Withdrawn) BS EN ISO 3506-1:2009 BS EN ISO 3506-2:2009 ASTM F606/F606M-16 ASTM F738-02(2008) (Withdrawn) ASTM A370-19^{e1}	A
METALS, ALLOYS and METAL PRODUCTS	Metallurgical Tests		
	Partial decarburization depth	BS EN ISO 898-1:2013	A
	Case depth (Surface Hardened Layers)	BS 6286:1982(2005) ISO 4970:1979 BS EN ISO 2639:2002 BS EN 10328:2005	A
	Depth of Decarburisation	BS EN ISO 3887:2003	A
	Dezincification	BS EN ISO 6509-1:2014 AS 2345:2006 (Appendix C)	A
	Grain size (Comparison)	BS EN ISO 643:2012 ASTM E112- 13(Method A)	A
	Fractographic and microscopical examination	Documented In-House Method RP 361	A
	Graphite in Iron	ASTM A247-16 BS EN ISO 945-1:2008	A
	Inclusion content	ISO 4967:2013 ASTM E45-13 (Method A only)	A
	Macrostructure	ASTM E381-17 ASTM A604/A604M-07(2017)	A
	Grain size (Comparison)	ASTM E112- 13(Method A)	B
	Austenite spacing	DNV-RP- F112 October 2008	B

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS and METAL PRODUCTS (cont'd)	<u>Metallurgical Tests (cont'd)</u>		
	Volume fraction	ASTM E562-11	A, B
	Detrimental intermetallic phases	ASTM A923:2014 Method A	A, B
Fe alloys, Stainless Steels, Al alloys, Ti alloys, Ni alloys and Superalloys	Microstructures	Documented In-House Method RP 368	A
Fe alloys, Stainless Steels and Al alloys	Microstructures	Documented In-House Method RP 368	B
Weldments and Brazing	Tests designated in specified Welding Codes as detailed below:-		
	Bend, Fracture, Hardness, Impact, Tensile, Visual examination, Macro / Micro examination	BS EN ISO 4136:2012 BS EN ISO 5173:2010+A1:2011 BS EN ISO 5178:2011 BS EN ISO 5817:2007 BS EN ISO 9015-1:2011 BS EN ISO 9015-2:2016 BS EN ISO 9016:2012 BS EN ISO 9017:2013 BS EN ISO 9018:2015 BS EN ISO 17637:2016 BS EN ISO 17639:2013 BS EN ISO 15613:2004 BS EN ISO 15614-8:2016 BS 1140:1993 BS 4871:Part 3:1985 BS 4872:Part 1:1982 BS 4872:Part 2:1976 BS EN 287:Part 1:2011 BS EN 288-9:1999 (Withdrawn) BS EN ISO 9606-2:2004 BS EN ISO 15614-1:2017 BS EN ISO 15614-2:2005 BS EN ISO 15620:2000 BPVC ASME IX:2017 CAP 533 BCAR Section A8-10	A
	Bend, Hardness, Impact, Tensile	BPVC ASME IX:2017	B

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
METALS, ALLOYS and METAL PRODUCTS (cont'd)			
METALLIC COATINGS	<u>Corrosion Tests</u>		
	Neutral salt spray	ASTM B117-18 BS EN ISO 9227:2012	A
	<u>Metallurgical Tests</u>		
	Plating/coating thickness	BS EN ISO 1463:2004 BS EN ISO 1456:2009	A
	Coating mass	BS EN 10346:2015 (Annex A) BS EN 10152:2017 (Annex A)	A
	<u>Chemical Test</u>		
Chromate treated surfaces	Presence of hexavalent chromium	Documented In-house Method RP110	A
PAINT and VARNISHES	<u>Environmental Tests</u>		
	Resistance to dry heat	Documented In-House Methods RP127	A
	<u>Mechanical Tests</u>		
	Adhesion	BS EN ISO 2409:2013	A
	Hardness	BS AU 148 Part 6:1969(1990) (Withdrawn) Clause 3 Pencil method	A
END			