


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>UKAS TESTING</p> <p>0142</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p>Howmet Ltd</p> <p>Issue No: 032 Issue date: 17 February 2022</p>	
	<p>Exeter Alloy Heron Road Exeter Devon EX2 7LL</p>	<p>Contact: Mr A Messenger Tel: +44(0)1392 429760 Fax: +44 (0)1392 429702 E-Mail: andy.messenger@howmet.com</p>
<p>Testing performed at the above address only</p>		

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
NICKEL BASE ALLOYS	<p><u>Chemical Tests</u></p> <p>Elemental analysis</p> <p>Aluminium Chromium Cobalt Copper Hafnium Iron Manganese Molybdenum Nickel Niobium Palladium Phosphorus Platinum Rhenium Ruthenium Silicon Tantalum Titanium Tungsten Vanadium Yttrium Zirconium</p> <p>Cerium Ruthenium</p> <p>Boron Calcium Magnesium</p>	<p>Documented In-House Methods from Materials Control Laboratory Manual (MCLM) using:</p> <p>XRFS (294) XRFS (298) Spark OES (293)</p> <p>XRFS (298)</p> <p>Spark OES (293)</p>



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
NICKEL BASE ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd) Elemental analysis (cont'd) Carbon Sulphur Nitrogen Oxygen Antimony Arsenic Bismuth Cadmium Gallium Indium Lead Selenium Silver Tellurium Thallium Tin Zinc	Combustion and Infra-Red Absorption (289) (295) Spark OES (293) Inert Gas Fusion (296) (299) High Temperature Hollow Cathode OES (287)
COBALT BASE ALLOYS	<u>Chemical Tests</u> Elemental analysis Aluminium Chromium Cobalt Copper Hafnium Iron Lanthanum Manganese Molybdenum Nickel Niobium Phosphorus Platinum Potassium Rhenium	XRFS (294) XRFS (298) Spark OES (293)



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COBALT BASE ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd) Elemental analysis (cont'd) Silicon Tantalum Titanium Tungsten Vanadium Yttrium Zirconium Boron Carbon Sulphur Nitrogen Oxygen Antimony Arsenic Bismuth Cadmium Gallium Indium Lead Magnesium Selenium Silver Tellurium Thallium Tin Zinc	 Spark OES (293) Combustion and Infra-Red Absorption (289)(295) Spark OES (293) Inert Gas Fusion (296) (299) High Temperature Hollow Cathode OES (287)



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METALS, ALLOYS AND METAL PRODUCTS	<u>Mechanical Tests</u> Vickers Hardness (HV 30) Rockwell Hardness (HRC) Stress Rupture (700°C -1050°C) Tensile tests: Ambient Temperature (Range 0.1 - 50kN) Elevated Temperature (650 °C and 850 °C)	BS EN ISO 6507-1:2018 ASTM E92 - 17 BS EN ISO 6508-1:2016 ASTM E18-20 BS EN 2002-005:2007 ASTM E139-11(2018) BS EN ISO 204:2018 BS EN ISO 6892-1:2019 ASTM E8/E8M-21 BS EN 2002-2:2005 BS EN ISO 6892-2:2018 ASTM E21-20
END		