


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p><b>UKAS</b> TESTING</p> <p>1091</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p><b>AMG Superalloys UK Ltd</b> trading as <b>AMG Analytical</b></p> <p>Issue No: 032 Issue date: 22 April 2021</p>	
	<p>Analytical Services Laboratory Fullerton Road Rotherham South Yorkshire S60 1DL</p>	<p>Contact: Mr Paul Hurditch Tel: +44 (0)1709 828500 Fax: +44 (0)1709 830391 E-Mail: amg-analytical@amg-s.com Website: www.amg-s.com</p>
<p><b>Testing performed at the above address only</b></p>		

### DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
METALS AND ALLOYS  Aluminium and Aluminium alloys	<p><u>Chemical Tests</u></p> <p>Boron Calcium Chromium Copper Iron Lead Lithium Magnesium Manganese Nickel Potassium Silicon Strontium Tin Titanium Vanadium Zinc Zirconium</p> <p>Boron Calcium Chromium Copper Iron Lead Lithium Magnesium Manganese Nickel Potassium Silicon Strontium Tin Titanium</p>	<p>Documented In-House method ICP 210 (ICPALLY) using ICP-OES</p> <p>Documented In-House method ICP 511 (ICPTIBAL) using ICP-OES</p>



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<p>METALS AND ALLOYS (cont'd)</p> <p>Aluminium and Aluminium alloys (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Vanadium Zinc Zirconium</p> <p>Boron Calcium Chromium Copper Iron Lead Lithium Magnesium Manganese Nickel Potassium Silicon Strontium Tin Titanium Vanadium Zinc Zirconium</p> <p>Chromium Cobalt Copper Iron Magnesium Manganese Molybdenum Nickel Phosphorus Potassium Silicon Tin Titanium Tungsten Vanadium Zinc Zirconium</p>	<p>Documented In-House method ICP 511 (ICPTIBAL) using ICP-OES (cont'd)</p> <p>Documented In-House method ICP 582 (ICPVAL) using ICP-OES</p> <p>Documented In-House method ICP 288 (ICPZIRCAL) using ICP-OES</p>



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METALS AND ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd)	
Chrome and Chrome alloys	Aluminium Boron Iron Phosphorus Silicon Titanium Vanadium	Documented In-House method ICP 228 (ICPCRC) using alkali fusion and ICP-OES
	Aluminium Boron Cobalt Copper Iron Lead Manganese Nickel Phosphorus Silicon Tin Titanium Vanadium Zinc	Documented In-House method ICP 226 (ICPCR) using ICP-OES
	Carbon Sulphur	Documented In-House methods LECO 501 & 502 using IR
	Hydrogen Nitrogen Oxygen	Documented In-House methods LECO 511 & 512 using IR and Thermal Conductivity



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METALS AND ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd)	
Cobalt and Cobalt alloys	Aluminium Boron Chromium Cobalt Copper Iron Manganese Molybdenum Niobium Nickel Phosphorus Silicon Tantalum Tin Titanium Tungsten Vanadium	Documented In-House method ICP 228 (ICPCOBASE) using alkali fusion and ICP-OES
Nickel and Nickel Alloys	Calcium Copper Hafnium Iron Lanthanum Manganese Molybdenum Niobium Palladium Phosphorous Platinum Potassium Ruthenium Silicon Sodium Thorium Vanadium Zirconium	Documented In-House method ICP 577 (ICP) using ICP-OES
Nickel Boron and Iron Boron alloys	Aluminium Boron Chromium Cobalt Copper Manganese Nickel Phosphorus Silicon	Documented In-House method ICP 228 (ICPFEB) using alkali fusion and ICP-OES



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METALS AND ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd)	
Nickel Boron and Iron Boron alloys (cont'd)	Aluminium Boron Chromium Cobalt Copper Iron Manganese Phosphorus Silicon	Documented In-House method ICP 228 (ICPNIB) using alkali fusion and ICP-OES
	Carbon Sulphur	Documented In-House methods LECO 501 & 502 using IR
	Hydrogen Nitrogen Oxygen	Documented In-House methods LECO 511 & 512 using IR and Thermal Conductivity
Titanium Metal and Alloys Zirconium Metal and Alloys	Phosphorus	Documented In-House methods XRF 301 and XRF 302 (XRFPHOS & XRFPHOSI) using bead fusion and XRF
	Aluminium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silicon Tin Titanium Tungsten Vanadium Zirconium	Documented In-House methods XRF 301 and XRF 302 (XRFFETI) using bead fusion and XRF



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METALS AND ALLOYS (cont'd)	<u>Chemical Tests</u> (cont'd)	
Titanium Metal and Alloys Zirconium Metal and Alloys (cont'd)	Aluminium Calcium Chromium Cobalt Copper Hafnium Iron Lead Magnesium Manganese Molybdenum Nickel Niobium Phosphorus Silicon Tantalum Tin Titanium Tungsten Vanadium Zinc Zirconium	Documented In-House methods XRF 301 and XRF 302 (XRFHSS2) using bead fusion and XRF
	Aluminium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Niobium Silicon Tin Titanium Tungsten Vanadium	Documented In-House methods XRF 301 and XRF 302 (XRFHSS) using bead fusion and XRF
	Carbon Sulphur	Documented In-House methods LECO 501 & 502 using IR
	Hydrogen Nitrogen Oxygen	Documented In-House methods LECO 511 & 512 using IR and Thermal Conductivity



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<p>ALLOYS</p> <p>Alloys: Aluminium, Vanadium, Titanium, Zirconium, Chromium, Manganese, Cobalt, Iron, Nickel, Copper, Niobium, Molybdenum, Tin, Tungsten, Magnesium, Calcium, Zinc, Hafnium, Tantalum and Lead, Metal Carbides</p>	<p><u>Chemical Tests</u></p> <p>Aluminium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silicon Tin Titanium Tungsten Vanadium Zirconium</p> <p>Aluminium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Niobium Silicon Tin Titanium Tungsten Vanadium</p>	<p>Documented In-House methods XRF 301 and XRF 302 (XRFFETI) using bead fusion and XRF</p> <p>Documented In-House methods XRF 301 and XRF 302 (XRFHSS) using bead fusion and XRF</p>



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<p>ALLOYS (cont'd)</p> <p>Alloys: Aluminium, Vanadium, Titanium, Zirconium, Chromium, Manganese, Cobalt, Iron, Nickel, Copper, Niobium, Molybdenum, Tin, Tungsten, Magnesium, Calcium, Zinc, Hafnium, Tantalum and Lead, Metal Carbides (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Aluminium Calcium Chromium Cobalt Copper Hafnium Iron Lead Magnesium Manganese Molybdenum Nickel Niobium Phosphorus Silicon Tantalum Tin Titanium Tungsten Vanadium Zinc Zirconium</p> <p>Phosphorus</p> <p>Elemental analysis 50 ppm - 100% range</p> <p>Aluminium Boron Chromium Copper Iron Lead Magnesium Manganese Nickel Phosphorus Tin Titanium</p>	<p>Documented In-House methods XRF 301 and XRF 302 (XRFHSS2) using bead fusion and XRF</p> <p>Documented In-House methods XRF 301 and XRF 302 (XRFPHOS &amp; XRFPHOSI) using bead fusion and XRF</p> <p>Documented In-House method XRF 502 using semi-quantitative XRF and UniQuant™ programme (pressed pellet)</p> <p>Documented In-House method ICP 236 (ICPCU) using ICP-OES</p>





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<p>ALLOYS (cont'd)</p> <p>Alloys: Aluminium, Vanadium, Titanium, Zirconium, Chromium, Manganese, Cobalt, Iron, Nickel, Copper, Niobium, Molybdenum, Tin, Tungsten, Magnesium, Calcium, Zinc, Hafnium, Tantalum and Lead, Metal Carbides (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Vanadium Zinc Zirconium</p> <p>Boron Chromium Cobalt Copper Iron Lead Magnesium Manganese Nickel Silicon Tin Titanium Vanadium Zinc</p> <p>Carbon Sulphur</p> <p>Hydrogen Nitrogen Oxygen</p>	<p>Documented In-House method ICP 236 (ICPCU) using ICP-OES (cont'd)</p> <p>Documented In-House method ICP 237 (ICPCUAL) using ICP-OES</p> <p>Documented In-House methods LECO 501 &amp; 502 using IR</p> <p>Documented In-House methods LECO 511 &amp; 512 using IR and Thermal Conductivity</p>
<p>REFRACTORIES AND RELATED RAW MATERIALS</p> <p>Refractories and related raw materials</p>	<p><u>Chemical Tests</u></p> <p>Elemental Oxides: Aluminium Barium Calcium Chromium Iron Magnesium Manganese Phosphorus Potassium Silicon Sodium Strontium Titanium Vanadium Zinc Zirconium</p>	<p>Documented In-House methods XRF 301 and XRF 302 (XRFOXI) using bead fusion and XRF</p>



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REFRACTORIES AND RELATED RAW MATERIALS	<u>Chemical Tests</u>	
Refractories and related raw Materials (cont'd)	Elemental analysis 50 ppm - 100% range	Documented In-House method XRF 502 using semi-quantitative XRF and UniQuant™ programme (pressed pellet)
	Free lime (Range 0-15%)	Documented In-House method ICP 570 using ICP-OES
	Carbon Sulphur	Documented In-House methods LECO 501 & 502 using IR
	Hydrogen Oxygen Nitrogen	Documented In-House methods LECO 511 & 512 using IR and Thermal Conductivity
Alloys, refractories and related, raw materials, metals, metal carbides, coatings, rare earth products, flue dust, corrosion products, slags, powders / solids of suitable dimensions	Phase identification by structural fingerprints with reference to ICD / PDF	Documented In-House method XRD 501 using qualitative XRD
	Elemental analysis 50 ppm - 100% range	Documented In-House method XRF 502 using semi-quantitative XRF and UniQuant™ programme (pressed pellet)
	<u>Physical Tests</u>	
Alloys, refractories and related raw materials, metals, metal carbides, rare earth products	Particle size analysis	Documented In-House method PART 511 using laser scattering Technique (Malvern Mastersizer)
Alloys, refractories, metals, oxides, and related raw materials	Loss on Drying	Documented In-House method LOD 501 by Gravimetry
Refractories and related raw materials	Loss on Ignition	Documented In-House method LOD 502 by Gravimetry
END		