Schedule of Accreditation

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
CATALYST MATERIALS	Chemical Tests	Documented In house methods using:
	Pt, Pd, Rh, Ir, Ru, Au, Ag	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Gravimetric or ICP-OES or AAS Finish XRF
	Palladium, Platinum	Fire Assay, ICP-OESby F42 and F43
Alumina Based Catalysts	Total and Acid Soluble Silver	Volumetric titration
Autocatalysts	Platinum, Palladium, Rhodium	ICP-OES
	Platinum, Palladium and Rhodium	XRF Spectrometry
Carbon Based Catalysts	Platinum, Palladium	ICP-OES, Gravimetry
Industrial Based Catalysts	Palladium	Fire Assay, Gravimetry, ICP-OES
	Silver	Volumetric Titration
	Palladium, Gold	Gravimetry, ICP-OES
Petroleum Catalysts	Acid Insolubles	Gravimetry
	Iridium	ICP-OES
	Platinum, Palladium	Gravimetry

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
CONCENTRATES, ORES AND MINERALS - BASE METAL	<u>Chemical Tests</u>	<u>Documented In-House Method using</u>:
	Cl and F	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Ion Selective Electrode
	Determination of carbon and sulphur	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Carbon/Sulphur Analyser (combustion with infra-red analyser)
	Multiple elements including but not limited to: Al, Sb, As, Ba, Bi, Cd, Ca, Cr, Co, Cu, Ge, Au, In, Ir, Fe, Pb, Mg, Mn, Mo, Ni, Os, Pd, P, Pt, K, Rh, Ru, Se, Si, Ag, Na, Sr, S, Te, Tl, Sn, Ti, V, U, Th, Y, Zn	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Acid digestion, microwave digestion or fusion peroxide followed by AAS or ICP-OES Fusion or pressed pellet with XRF finish
	Al, Sb, As, Ba, Be, Bi, B, Cd, Ce, Ca, Cr, Co, Cu, Ga, Ge, Au, In, Fe, Pb, Mg, Ni, K, Se, Ag, Na, Sr, Te, Tl, Sn, Ti, V, Zn	Fusion, acid digestion or fire assay followed by AAS using I1, I2, I8, I10, I17, I18, I19, I20, I31, F18, F19, F20, F21, F22, F23, F25, F26, F33, F41
	Sb, Cr, Co, Fe (elemental and oxide), Mn (including oxide), Pb, Sn, Ti, Zn (including oxide)	Fusion or acid digestion and removal of impurities by analyte precipitation or oxidation or reduction followed by volumetric titration using G2, G14, G15, G42, G23, G37, G38, G57, G62, G65, G66, G67, G88, G31, G33 & G34

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
CONCENTRATES, ORES AND MINERALS - BASE METAL (cont'd)	Chemical Tests (cont'd)	Documented In-House Method using:
	Al, Sb, As, Ba, Cd, Cu, Fe, Pb, Mg, Mn, Hg, Ni, Ag	Fusion or acid digestion followed by ICP-OES using I2, I6, I17, I18, I19, 120 & I31
	C, Cl, Cu, Au, Ni, Si, Ag, S as sulphate	Analyte precipitation or fire assay followed by Gravimetric quantification using G9, G11, G13, G16, G18, G20, G42, G43, G44, G48, G52, G54, F18, F19, F20, F21, F22, F23, F25, F26, F33 & F41
	Pb & Zn	Fusion and XRF by I28
	Chlorine	Gravimetry by G11
	Fluorine, Germanium, Silicon	UV/VIS Spectrophotometry by G21, G78, G48, G76, G79 & G80
Concentrates	Gallium and Germanium	Acid digestion followed by ICP-OES using I42
Mining Concentrates	Platinum, Palladium, Rhodium	Acid digestion followed by ICP-OES using P35
Bauxite	Alumina, Ca, Fe, Mg, P, K, Na, Si, Ti	XRF Spectrometry
Copper Concentrates	Chlorine (50 - 1000 ppm)	XRF Spectrometry
Copper, Lead, Zinc, Silver and Gold concentrates	Fluorine (40 – 3500 ppm)	Ion Selective Electrode using G85
Copper concentrates containing less than 2% Arsenic	Copper	Volumetric titration - Manual Volumetric titration - Automated using OMINS - Method G90
Chromium Ores	Silicon, Calcium, Aluminium, Titanium and Magnesium as oxides and Phosphorus, Chromium and Iron	XRF Spectrometry

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
CONCENTRATES, ORES AND MINERALS - BASE METAL (cont'd)	Chemical Tests (cont'd)	Documented In-House Method using:
Ilmenite and Rutile	Titanium Dioxide	Volumetric titration
Iron Ores	Alumina, Ca, Cr, Mg, Mn, P, K, Si, Ti, V, Fe, Si, Al, S, V, Co, Ni, Cu, As, Pb, Zn	XRF Spectrometry
	Ca, Ce, Li, Mg, K, Na	AAS
	Iron and Iron as oxide	Volumetric titration
	Silica	Gravimetry
	Determination of Sulphur	Carbon/Sulphur Analyser
Manganese Ores	Alumina, Ba, Ca, Fe, Mg, P, K, Si, Ti	XRF Spectrometry
Manganese Ores	Manganese and Manganese Dioxide	Volumetric titration
Manganese Ores	Silica	Gravimetry
Molybdenite	Copper, Molybdenum, Rhenium	XRF Spectrometry I29
Pyrite	Gold	Fire Assay Gravimetry
	Sulphur	Gravimetry
Siliceous Ores	Sb, As, Bi, Cd, Co, Cu, In, Fe, Pb, Mn, Ni, Se, Ag, Te, Tl, Zn	AAS
	Silica	Gravimetry
Silver ores	Aluminium as oxide, Sb, As, Pb, Zn	peroxide fusion followed by ICP-OES
Tantalite	Tantalum and Niobium	XRF Spectrometry
Zinc Concentrates	Zinc, Copper, Iron	XRF Spectrometry using I57

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
METALS AND ALLOYS - FERROUS	Chemical Tests	Documented In-House Method using:
	Multiple elements including but not limited to: Al, Sb, As, Ba, Bi, Cd, Ca, Cr, Co, Cu, Ge, Au, In, Ir, Fe, Pb, Mg, Mn, Mo, Ni, Os, Pd, P, Pt, K, Rh, Ru, Se, Si, Ag, Na, Sr, S, Te, Tl, Sn, Ti, V, U, Th, Y, Zn	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Acid digestion, microwave digestion or fusion peroxide followed by AAS or ICP-OES XRF
Ferrochrome and Charge Chrome	Chromium	Volumetric titration
Ferro Alloys	Palladium, Platinum, Rhodium	ICP-OES
	Silicon	Gravimetry
Ferro-Chromium and Ferro-Titanium Alloys	Determination of Carbon and Sulphur	Carbon/Sulphur Analyser
Ferro-Manganese	Manganese	Volumetric titration
Ferro-Molybdenum	Molybdenum	XRF
Stainless steel residue	Chromium, Molybdenum, Nickel and Iron	XRF Spectrometry
	Determination of Carbon and Sulphur	Carbon/Sulphur Analyser
METALS AND ALLOYS - BASE METAL	Chemical Tests	Documented In-House Method using:
	Multiple elements including but not limited to: Al, Sb, As, Ba, Bi, Cd, Ca, Cr, Co, Cu, Ge, Au, In, Ir, Fe, Pb, Mg, Mn, Mo, Ni, Os, Pd, P, Pt, K, Rh, Ru, Se, Si, Ag, Na, Sr, S, Te, Tl, Sn, Ti, V, U, Th, Y, Zn	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Acid digestion, microwave digestion or fusion peroxide followed by AAS or ICP-OES XRF

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
METALS AND ALLOYS - BASE METAL	Chemical Tests	Documented In-House Method using:
	Bi, Cr, Co, Cu, Pb, Mn, Ag, Sn	Fusion or acid digestion and removal of impurities by analyte precipitation or oxidation or reduction followed by volumetric titration using G5, G14, G42, G18, G31, G33, G37, P2, G58, G59, G60 & G61
	Al, Sb, As, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Ga, Ge, In, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Sr, Te, Tl, Sn, Ti, V, Zn	Acid digestion followed by AAS using I4, I5 & I22
	Sb, As, Bi, Cd, Cu, In, Ni, Rh	Acid digestion followed by ICP-OES using I5, I27, I32 & I22
	C, Cu, Ir, Ni, Rh,	Element precipitation followed by Gravimetric quantification using G9, G18, P25 & G44
	Au, Pd, Pt, Rh, Ag	Fire Assay with nickel sulphide collection, Gravimetry & ICP-OES using F15
	Molybdenum	Oxidation, fusion & XRF using I29
BASE METAL MATERIALS	Chemical Tests	Documented In-House Method using:
- Sweeps, Residues, Slimes, Mattes and Secondary Materials	Sb, Bi, Cr, Pb, Sn, Zn	Volumetric titration
	Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Ga, Ge, In, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Sr, Te, Tl, Sn, Ti, V, Zn	AAS
	C, Cl, Cu, Ni, Os, Se	Gravimetry
	Fluorine	UV/VIS Spectrophotometry
	Au, Ir, Pd, Pt, Rh, Ru, Ag	Fire Assay/Gravimetry ICP-OES
	Selenium	ICP-OES

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PRECIOUS METAL BEARING MATERIALS	Chemical Tests	Documented In-House Method using:
Bullion: Gold, Gold/Silver, Silver, Lead, Copper/Precious metal	Gold	Fire Assay
	Gold, Silver	Fire Assay, Gravimetry
	Palladium, Platinum	Fire Assay, ICP-OES
	Copper	Gravimetry
	Silver	Volumetric titration
	Iridium, Rhodium	ICP-OES
Platinum bullion, precious metal concentrates and residues	Platinum, Palladium, Rhodium	Gravimetry, ICP-OES
Carbonaceous Material	Gold	Fire Assay, Gravimetry
Complexed Organics, Resins and Cyanides	Gold	Gravimetry
Electronic/Computer Materials	Copper and Gold	Gravimetry
	Gold, Silver	Fire Assay, Gravimetry
	Palladium, Platinum	Fire Assay, ICP-OES
	Silver	AAS
Metals and Alloys	Copper	Gravimetry
	Gold, Silver	Fire Assay, Gravimetry
	Palladium, Platinum	Fire Assay, ICP-OES
	Platinum, Rhodium, Iridium	Gravimetry, ICP-OES
	Silver	Volumetric titration
	Palladium, Platinum, Rhodium	ICP-OES

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PRECIOUS METAL BEARING MATERIALS (cont'd)	Chemical Tests (cont'd)	Documented In-House Method using:
Ores and Concentrates	Au, Ir, Pd, Os, Pt, Rh, Ru (Osmiridium)	Gravimetry, ICP-OES
Silver/Film Scrap	Silver: Halide and Raw Scrap	Fire Assay, Gravimetry
Sweeps/Residues	Copper	Gravimetry
	Au, Ag, Pd, Pt, Rh	Fire Assay, ICP-OES
	Au, Pd, Pt, Ir, Rh, Ru	Gravimetry ICP-OES
	Silver	Fire Assay, Gravimetry
CHEMICALS: INORGANIC	Chemical Tests	Documented In-House Method using:
Nickel Carbonate, Oxide, Sulphate	Nickel	Gravimetry
Rhenium Salts	Rhenium	Gravimetry
DUSTS AND PARTICULATES	Chemical Tests	Documented In-House Method using:
	Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Ga, In, Fe, Pb, Mg, Mn, Mo, Ni, Se, Ag, Sr, Te, Th, Sn, Ti, V, Zn	ICP-OES

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
GLASS, OXIDES	Chemical Tests	Documented In-House Method using:
	Pd, Rh, Ru	ICP-OES
High grade Rhodium	Rhodium	ICP-OES
METALS: HIGH PURITY	Chemical Tests	Documented In-House Method using:
	Multiple elements including but not limited to: Al, Sb, As, Ba, Bi, Cd, Ca, Cr, Co, Cu, Ge, Au, In, Ir, Fe, Pb, Mg, Mn, Mo, Ni, Os, Pd, P, Pt, K, Rh, Ru, Se, Si, Ag, Na, Sr, S, Te, Tl, Sn, Ti, V, U, Th, Y, Zn	Analysis through the appropriate application of Documented In-House Methods following the Flexible Scope Procedures Section 17 and SI246 Using the following techniques: Acid digestion, microwave digestion or fusion peroxide followed by AAS, ICP-OES
Aluminium, Cadmium, Lead, Tin, Zinc	Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Ga, In, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Te, Tl, Sn, Ti, V, Zn	ICP-OES
	Silicon and Germanium	UV/VIS Spectrophotometry
Copper Cathode	P	ICP-OES using method I55
	S	Carbon/Sulphur Analyser I55
SCAN PROFILE QUALITATIVE/ QUANTITATIVE	Chemical Tests	Documented In-House Method using:
All Materials in Solution	Base Metals	ICP-OES
Non-Metallic Materials	Base/Precious Metals	ICP-OES
Metallic Materials and Solutions	Base/Precious Metals	ICP-OES

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ALL MATERIALS (LISTED IN THIS SCHEDULE EXCEPT SOLUTIONS)	Physical Tests Moisture content Loss on Ignition Size Analysis	Documented In-House Method using: Gravimetry Gravimetry Mesh Screening
END		