TESTING AND CALIBRATION LABORATORY ACCREDITATION PROGRAM (LAP)

Scope of Accreditation

Accredited Laboratory No. 958

Legal Name of Accredited Laboratory:	**AGAT Laboratories Ltd.**
Location Name or Operating as (if applicable):	AGAT Mining Geochemistry Testing Services
Contact Name:	Belinda B. Lacuata
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SCC File Number:	151266
Accreditation Standard(s):	ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories
Fields of Testing:	Chemical/Physical
Program Specialty Area:	Mineral Analysis
Initial Accreditation:	2021-09-03
Most Recent Accreditation:	2021-09-03
Accreditation Valid to:	2025-09-03

SCC Group Accreditation:

This laboratory is a part of a Group Accreditation with the following facilities in accordance with SCC's policy on Group Accreditation documented in the Accreditation Services Accreditation Program Overview.

AGAT Laboratories Ltd, Mississauga, ON, Accredited Laboratory No.665
AGAT Laboratories Ltd., Thunder Bay, ON, Accredited Laboratory No.875

The physical sample preparation for this laboratory including any off-site sample preparation locations are performed at the above AGAT Laboratories Ltd. laboratories as listed on the scopes of accreditation that are monitored regularly for quality control and quality assurance practices. The physical sample preparation locations including off-site sample preparation locations are listed under Mississauga and Thunder Bay scope which are part of AGAT Laboratories Ltd. mining Group Accreditation. Refer to Mississauga and Thunder Bay scopes for sample preparation accredited methods.

Lead collection-fire assay sample preparations are conducted at AGAT laboratories listed above located at 5616 McAdam Road, Mississauga, ON, L4Z 1P1 and 1046 Gorham St., Thunder Bay, Ontario P7B 5X5.

METALLIC ORES AND PRODUCTS

Mineral Analysis Testing:

Geotechnical Testing

Mineral Assaying

MIN-283-12001	Determination of Total Carbon and Sulphur in Geological Samples Using Infrared Combustion Furnace (Modified ASTM E1915, ASTM E1019, ASTM D5373)
MIN-283-12002	Determination of Graphitic Carbon In Geological Samples Using Carbon Determinator (Modified ASTM E1915)
MIN-283-12003	Extraction of Acid Soluble Sulphate (SO_4^{2-}) in Mineralogical and Acid Rock Drainage Samples by Hydrochloric Acid Digestion followed by ICP-OES (Modified ASTM C114)
MIN-283-12004	Extraction of Rare Elements and Oxides in Mineralogical Samples Using Lithium Borate Fusion and ICP-OES and/or ICP-MS (Modified from Sulcek, et. al. Decomposition in Inorganic Analysis, 1989) - ICP-OES: SiO_2, Al_2O_3, Fe_2O_3, CaO, MgO, Na_2O, K_2O, Cr_2O_3, TiO_2, MnO, P_2O_5, SrO, BaO; - ICP-MS: Ce, La, Y, Dy, Er, Eu, Gd, Ho, Lu, Tb, Tm, Yb, Nd, Pr, Sm, Th, U
MIN-283-12005	Determination Of Loss On Ignition In Mineralogical Testing Samples (Sulcek, et. al. Decomposition in Inorganic Analysis, 1989)
MIN-283-12006	Extraction of Major and Trace Elements and Metals in Geological Samples Using Sodium Peroxide Fusion for ICP-OES and ICP-MS Finishes (Modified from Bozic, et.al. Rapid Procedure for the Dissolution of a Wide Variety of Ore and Smelter Samples prior to Analysis by ICP-AES, Analyst, 1989) - ICP-OES: Cu, Ni, Co, Fe, Mg, Pb, Si, Ca, Al, Mn, Zn, Cr, Sn, As, Mo; - ICP-OES and ICP-MS: Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Ho, In, K, La, Li, Lu, Mg, Mn, Mo, Nb, Nd, Ni, P, Pb, Pr, Rb, Sb, Sc, Se, Si, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, Tm, U, V, W, Y, Yb, Zn, Zr

MIN-283-12008	Extraction of Major and Trace Elements and Metals in Geological Samples by Four Acid Digestion followed by ICP-OES and/ or ICP-MS (Fletcher. Handbook of Exploration Geochemistry. Volume 1 – Analytical Methods in Geochemical Prospecting. 1981) - ICP-OES: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, In, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Rb, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zr, Zn; - ICP-OES and ICP-MS: Ag, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Ga, Ge, Hf, In, La, Li, Mn, Mo, Ni, Nb, P, Pb, Re, Rb, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Tl, U, V, W, Y, Zn, Zr
MIN-283-12010	Determination of Metals in Geological and Mineralogical Samples by Aqua Regia (Nitric and Hydrochloric Acid) Digestion followed by ICP-OES and/or ICP-MS (Fletcher. Handbook of Exploration Geochemistry. Volume 1 – Analytical Methods in Geochemical Prospecting. 1981) - ICP-OES: Ag, Al, As, B, Ba, Be, Bi, Fe, Ga, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Rb, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zr, Zn; - ICP-OES and ICP-MS: Ag, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Ga, Ge, Hf, Hg, In, La, Li, Mn, Mo, Ni, Nb, P, Pb, Re, Rb, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Tl, U, V, W, Y, Zn, Zr
MIN-283-12015	Determination of Gold (Au) in Gold Bead Samples From Lead Fusion Fire Assay Using Gravimetric Method (Bugbee.Textbook of Fire Assaying. 1991; Shepard, et.al. Fire Assaying. 2008; Johnston, et.al Rock and Mineral Analysis. 1989)
MIN-283-12016	Extraction of Gold (Au), Platinum (Pt) and Palladium (Pd) in Gold Bead Samples from Lead Fusion Fire Assay Process using Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES) Finish (Bugbee. Textbook of Fire Assaying. 1991; Shepard, et.al. Fire Assaying. 2008; Johnston, et.al Rock and Mineral Analysis. 1989)
MIN-283-12017	Determination of Gold (Au) in Gold Bead Samples from Lead Fusion Fire Assay Procedure using Atomic Absorption Spectroscopy (AAS) (Bugbee. Textbook of Fire Assaying. 1991; Fletcher. Handbook of Exploration Geochemistry. Volume 1 – Analytical Methods in Geochemical Prospecting. 1981; Beaty, et. al. Concepts, Instrumentation and Techniques in Atomic Absorption Spectrophotometry. 1993)
MIN-283-12025	Determination of Major, Trace and Rare Earth Elements Including Metals and Oxides in Geological, Soil and Ore Samples Following Various Laboratory Extraction and Acid Digestion Methods Using Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES) (In-House): see MIN-283-12003, MIN-283-12004, MIN-283-12006, MIN-283-12008, MIN-283-12010 and MIN-283-12016

MIN-283-12026	Determination of Major, Trace and Rare Earth Elements in Geological, Soil and Ore Samples Following Various Laboratory Extraction and Acid Digestion Methods Using Inductively Coupled Plasma – Mass Spectroscopy (ICP-MS) (In-House): see MIN-283-12004, MIN-283-12006, MIN-283-12008 and MIN-283-12010
*ROCK-10-26000	Determination of Oxide Content in Mineral Samples by Lithium Borate Fusion and Wavelength Disperse X-Ray Fluorescence Spectroscopy (In-House): Al_2O_3, BaO, CaO, Cr_2O_3, CuO, Fe_2O_3, HfO_2, K_2O, MgO, MnO, Na_2O, NiO, P_2O_5, PbO, SiO_2, SO_3, SrO, TiO_2, V_2O_5, ZnO, ZrO_2, %LOI
*ROCK-10-26001	Preparation and Determination of Base Metals and Rare Earth Elements in Mineralogical Samples by Wavelength Dispersive X-Ray Fluorescence (XRF) Spectroscopy (In-House): As, Ba, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Ho, La, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sb, Sc, Sm, Sn, Sr, Ta, Tb, Th, Tm, U, V, W, Y, Yb, Zn, Zr
*ROCK-10-26002	Preparation and Determination of Specific Gravity Using Gas Pycnometry (Modified API40, ASTM D5550)

Number of Scope Listings: 16

Notes:

*****Tests marked with asterisk are performed at Unit #106 & #110, 2730 39 Ave NE, Calgary, AB T1Y 7H6**.**

RG-MINERAL: SCC Requirements and Guidance for the Accreditation of Mineral Analysis Testing Laboratories

ASTM: ASTM International, formerly American Society of Testing and Materials

API: American Petroleum Institute

LOI: Loss of ignition

This document forms part of the Certificate of Accreditation issued by the Standards Council of Canada (SCC). The original version is available in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

Elias Rafoul
Vice-President, Accreditation Services
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