

## TESTING AND CALIBRATION LABORATORY ACCREDITATION PROGRAM (LAP)

### Scope of Accreditation

**Legal Name of Accredited Laboratory:** AGAT Laboratories Ltd.

Location Name or Operating as (if applicable): AGAT Mining Geochemistry Testing Services

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<b>SCC File Number:</b>	151266
<b>Accreditation Standard(s):</b>	ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories
<b>Fields of Testing:</b>	Chemical/Physical
<b>Program Specialty Area:</b>	Mineral Analysis
<b>Initial Accreditation:</b>	2021-09-03
<b>Most Recent Accreditation:</b>	2023-11-28
<b>Accreditation Valid to:</b>	2026-09-03

#### 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., Thunder Bay, SCC File No. 151083
- AGAT Laboratories Ltd., Calgary, SCC File No. 151266

The physical sample preparation involving accredited test methods for Minerals Analysis as listed on the Scope of Accreditation may be performed at the AGAT Laboratories Ltd., Calgary, SCC File No. 151266 location or at off-site sample preparation laboratories that are monitored regularly for quality control and quality assurance practices:

- AGAT Laboratories Ltd. –3500 19th Street NE, Calgary, AB T2E 8B9

- AGAT Laboratories Ltd. – 1045 Gorham Street, Thunder Bay, ON P7B 5X5
- AGAT Laboratories Ltd. – 35 General Aviation Road, Timmins, ON P4N 7C3
- AGAT Laboratories Ltd. – 1185 Rue Des Foreurs, Val-d'Or, QC J9P

*Remarque: La présente portée d'accréditation existe également en français, sous la forme d'un document distinct.*

*Note: This scope of accreditation is also available in French as a document issued separately.*

## ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY

### Environmental:

#### **Leachates, Wastewater**

***ARD-284-18011	Determination of pH in Aqueous Extracts and Leachates Using a Manual pH Meter (formerly ARD-283-18011) (Eaton, A. D., Clesceri, L. S., Rice, E. W. and A. E. Greenberg (Eds). 2012. 4500-H <sup>+</sup> pH Value in Standard Methods for the Examination of Water and Wastewater, 23rd ed., American Public Health Association. Washington, D.C): pH
***ARD-284-18012	Determination of Electric Conductivity (EC) in Aqueous Extracts and Leachates Using Manual EC Meter (formerly ARD-283-18012) (Eaton, A. D., Clesceri, L. S., Rice, E. W. and A. E. Greenberg (Eds). 2012. 2510 Conductivity in Standard Methods for the Examination of Water and Wastewater, 23rd ed., American Public Health Association. Washington, D.C.): Conductivity (25°C)
***ARD-284-18013	Determination of Oxidation Reduction Potential (Eh) in Aqueous Extracts & Leachates Using ORP Meter (formerly ARD-283-18013) (Eaton, A.D., Clesceri, L. S., Rice, E.W. and A.E. Greenberg (Eds). 2580 B Oxidation-Reduction Potential Measurement in Clean Water in Standard Methods for the Examination of Water and Wastewater, 23rd ed., American Public Health Association, Washington, D.C.): Oxidation Reduction Potential

#### **Tailings, Waste Rock, Soil & Ore**

***ARD-284-18000	Determination of the Neutralization Potential of Acid Rock Drainage (ARD) Samples by the Modified Acid-Base Accounting (ABA) Procedure (formerly ARD-283-18000) (Lawrence, R. W., Poling, G.P. and Marchant, P.B., 1989. Investigation of Predictive Techniques for Acid Mine Drainage. Report on DSS Contract No. 23440-7-9178/01-SQ, Energy Mines and Resources, Canada, MEND Report 1.16.1 (a). (Lawrence Back Titration to pH 8.3, 1989 Method; Mend Project 1.16.1b, 1991 Method): Neutralization Potential as kg CaCO <sub>3</sub> /tonne
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***ARD-284-18003	Determination of Saturated Paste pH of Acid Rock Drainage (ARD) Samples Using a Manual pH Meter (formerly ARD-283-18003) (Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M., Field and Laboratory Method Applicable to Overburden and Minesoils, Report EPA-600/2-78-054, U.S. National Technical Information Service Report PB-280 495 p 45-47, March 1978.): Paste pH
***ARD-284-18019	Determination of Total Carbon and Sulphur in Geological Samples Using Infrared Combustion Furnace (formerly MIN-283-12001)
***ARD-284-18020	Determination of Graphitic Carbon in Geological Samples Using Using Infrared Combustion Furnace (formerly MIN-283-12002)
***ARD-284-18021	Extraction of Acid Soluble Sulphate (SO <sub>4</sub> <sup>2-</sup> ) in Mineralogical and Acid Rock Drainage Samples by Hydrochloric Acid Digestion followed by ICP-OES (formerly MIN-283-12003)
MIN-283-12018	Determination of Major and Trace Metals in Industrial Waters, Aqueous Extracts and Leachates using Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) Al, Ba, Ca, Cr, Cu, Fe, K, Li, Mg, Mn, Na, Ni, P, S, Si, Sr, Ti, V, Zn
MIN-283-12021	Determination of Major and Trace Metals in Industrial Waters, Aqueous Extracts and Leachates using Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS) Ag, Al, As, Au, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Hg, Ho, In, K, La, Li, Lu, Mg, Mn, Mo, Na, Nb, Nd, Ni, P, Pb, Pd, Pt, Pr, Rb, Re, Sb, Sc, Se, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, Tm, U, V, W, Y, Yb, Zn, Zr

## METALLIC ORES AND PRODUCTS

### Mineral Analysis Testing

#### Mineral Assaying

MIN-283-12004	Extraction of Rare Elements and Oxides in Mineralogical Samples Using Lithium Borate Fusion and ICP-OES and/or ICP-MS - ICP-OES: Al <sub>2</sub> O <sub>3</sub> , BaO, CaO, Cr <sub>2</sub> O <sub>3</sub> , CuO, Fe <sub>2</sub> O <sub>3</sub> , K <sub>2</sub> O, MgO, MnO, Na <sub>2</sub> O, NiO, P <sub>2</sub> O <sub>5</sub> , SiO <sub>2</sub> , SrO, TiO <sub>2</sub> , ZnO; - ICP-MS: Ba, Ce, Co, Cs, Cu, Dy, Er, Eu, Ga, Ge, Gd, Hf, Ho, In, La, Lu, Mo, Nb, Nd, Ni, Rb, Pr, Sc, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zr
MIN-283-12005	Determination of Loss on Ignition in Mineralogical Testing Samples

MIN-283-12006	<p>Extraction of Major and Trace Elements and Metals in Geological Samples Using Sodium Peroxide Fusion for ICP-OES and ICP-MS</p> <p>- ICP-OES: Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, La, Li, Mg, Mn, Mo, Ni, P, Pb, S, Sb, Sc, Si, Sn, Sr, Ti, V, W, Y, Zn;</p> <p>- ICP-OES and ICP-MS: Al, As, 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, S, Sb, Sc, Se, Si, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, Tm, U, V, W, Y, Zn, Zr</p>
MIN-283-12008 <sup>a</sup>	<p>Extraction of Major and Trace Elements and Metals in Geological Samples by Four Acid Digestion followed by ICP-OES and/or ICP-MS</p> <p>- ICP-OES: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W, Zn;</p> <p>- ICP-OES and ICP-MS: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Ni, Nb, P, Pb, Re, Rb, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr</p>
MIN-283-12010 <sup>a</sup>	<p>Determination of Metals in Geological and Mineralogical Samples by Aqua Regia (Nitric and Hydrochloric Acid) Digestion followed by ICP-OES and/or ICP-MS</p> <p>- ICP-OES: Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W, Zn;</p> <p>- ICP-OES and ICP-MS: Ag, Al, As, Au, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Ni, Nb, P, Pb, Re, Rb, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr</p>
MIN-283-12015 <sup>f</sup>	<p>Determination of Gold (Au) in Gold Bead Samples from Lead Fusion Fire Assay Using Gravimetric Method</p>
MIN-283-12016 <sup>f</sup>	<p>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</p>
MIN-283-12017 <sup>f</sup>	<p>Determination of Gold (Au) in Gold Bead Samples from Lead Fusion Fire Assay Procedure using Atomic Absorption Spectroscopy (AAS)</p>
MIN-283-12025	<p>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): see ARD-284-18021, MIN-283-12004, MIN-283-12006, MIN-283-12008, MIN-283-12010 and MIN-283-12016</p>
MIN-283-12026	<p>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) : see MIN-283-12004, MIN-283-12006, MIN-283-12008 and MIN-283-12010</p>

*ROCK-10-26000	Determination of Oxide Content in Mineral Samples by Lithium Borate Fusion and Wavelength Disperse X-Ray Fluorescence Spectroscopy (In-House): Al <sub>2</sub> O <sub>3</sub> , BaO, CaO, Cr <sub>2</sub> O <sub>3</sub> , CuO, Fe <sub>2</sub> O <sub>3</sub> , HfO <sub>2</sub> , K <sub>2</sub> O, MgO, MnO, Na <sub>2</sub> O, NiO, P <sub>2</sub> O <sub>5</sub> , PbO, SiO <sub>2</sub> , SO <sub>3</sub> , SrO, TiO <sub>2</sub> , V <sub>2</sub> O <sub>5</sub> , ZnO, ZrO <sub>2</sub> , %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
**MIN-12007	Soil Sieving, Screen Analysis and Particle Size Distribution of Mineralogical Samples
**MIN-12010	Crushing and Splitting of Mineralogical Samples - Mining Geochemistry Assaying Division – Branches
**MIN-12012	Milling of Mineralogical Samples

Number of Scope Listings: 26

**Notes:**

**ISO/IEC 17025:2017:** General Requirements for the Competence of Testing and Calibration Laboratories

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

**LOI:** Loss on ignition

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

\*\*Physical sample preparations marked with asterisks are performed at 3500 19th Street NE, Calgary, AB T2E 8B9 and other off-site physical sample preparation locations.

\*\*\*Tests are performed at location 3-2215 27th Ave NE, Calgary AB T2E 7M4

<sup>a</sup>Acid digestions are performed at 3-2215 27th Ave NE, Calgary AB, T2E 7M4 and 2620 21st St. NE, Calgary, AB, T2E 7L3

<sup>f</sup>Fire assay is performed at off-site facility of AGAT Laboratories Ltd. 1045 Gorham Street, Thunder Bay, ON P7B 5X5



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](http://www.scc.ca).

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