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SCOPE OF ACCREDITATION

**ALS Limited
ALS MINERALS
2103 Dollarton Hwy
North Vancouver, BC
V7H 0A7**

Accredited Laboratory No. 579

(Conforms with requirements of CAN-P-1579 , CAN-P-4E (ISO/IEC 17025:2005))

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CLIENTS SERVED: Mining, Exploration and other interested parties

FIELDS OF TESTING: Chemical/Physical

PROGRAM SPECIALTY AREA: Mineral Analysis

SCOPE ISSUED ON: 2017-01-16

ACCREDITATION VALID TO: 2021-05-18

The physical sample preparation involving accredited test method for Minerals Analysis as listed on the Scope of Accreditation may be performed at the ALS Minerals North Vancouver location or at off-site sample preparation laboratories that are monitored regularly for quality control and quality assurance practices:

ALS Minerals - Unit 150 - 2155 Dollarton Hwy, North Vancouver, BC V7H 2B2 Canada
ALS Minerals - 2912 Molitor Street, Terrace, British Columbia V8G 3A4 Canada
ALS Minerals - 3 Coronation Drive, PO Box 1919, Yellowknife, NWT X1A 2P4 Canada
ALS Minerals - 78 Mt. Sima Rd Whitehorse, YK Y1A 0A8 Canada
ALS Minerals - 2953 Shuswap Drive, Kamloops, BC V2H 1S9 Canada

ALS Minerals - Jazmin 1140, e/R, Michel y Amapola, Sector Reforma Colonia San Carlos, Guadalajara, Jalisco 44460 Mexico

ALS Minerals Magnolia #16, Esq. Laurles Col. Libertad, Hermosillo, Sonora 83130 Mexico

ALS Minerals - Avenida de las Industrias No 6500, Col. Zona Industrial Nombre de Dios, Chihuahua, Chihuahua 31156 Mexico

ALS Minerals - Transito Pesado S/n, Bodega 100, 200, 300 y 400, Frente a Central Camionera, Col. Lomas de la Isabelica, Zacatecas, Zacatecas 98099 Mexico

METALLIC ORES AND PRODUCTS

Mineral Analysis Testing

Mineral Assaying

AA45	Ag, Cu, Pb and Zn - Determination of Base Metals Using AAS Following an Aqua Regia Digestion
AA46	Ag, Cu, Pb, Zn and Mo - Determination of Ores and High Grade Materials Using AAS Following an Aqua Regia Digestion
AA61	Ag, Co, Cu, Ni, Pb and Zn - Determination of Base Metals Using AAS Following a Four Acid Digestion
AA62	Ag, Co, Cu, Mo, Ni, Pb and Zn - Determination of Ores and High Grade Materials Using AAS Following a Four Acid Digestion
Au/Ag-GRA	Determination of Au and Ag by Lead Collection Fire Assay and Gravimetric Finish
Au-AA	Determination of Au by Lead Collection Fire Assay and Atomic Absorption Spectrometry
C-IR07	C - Determination of Total C by Leco Furnace and Infrared Spectroscopy.
ICP81	Al, Co, Cu, Fe, Mg, Mn, Ni, Pb, S, and Zn by Sodium Peroxide Fusion and ICP-AES
ME-ICP06	SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , CaO, MgO, Na ₂ O, K ₂ O, Cr ₂ O ₃ , TiO ₂ , MnO, P ₂ O ₅ , SrO, BaO, Total - Determination of Major Oxides by Lithium Metaborate/Lithium Tetraborate Fusion and ICP-AES.
ME-ICP41	Multi-Element (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Ti, Tl, U, V, W, Zn) Determination by Aqua Regia Digestion and ICP-AES.
ME-ICP41a	Multi-Element (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, Ga, Hf, Hg, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, S, Sb, Sc, Se, Si, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn) Determination of Low Grade Ores by Aqua Regia Digestion and ICP-AES.
ME-ICP61	Multi-Element (Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb,

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	Rb, S, Sb, Sc, Se, Si, Sn, Sr, Ta, Te, Ti, Tl, U, V, W, Y, Zn, Zr) Determination by 4-Acid Digestion and ICP-AES
ME-ICP61a	Multi-Element (Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, Ga, Hf, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr) Determination of Low Grade Ores by Four-Acid Digestion and ICP-AES.
ME-MS41	Multi-Element (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr) Determination by Aqua Regia Digestion and ICP-AES and ICP-MS.
ME-MS61	Multi-Element (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, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Si, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr) Determination by 4 Acid Digestion and ICP-AES and ICP-MS.
ME-MS81	Ba, Ce, Cr, Cs, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Lu, Nb, Nd, Pr, Rb, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zr) Determination of Rare Earth Elements by Lithium Borate Fusion and ICP-MS.
ME-XRF06	SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , CaO, MgO, Na ₂ O, K ₂ O, Cr ₂ O ₃ , TiO ₂ , MnO, P ₂ O ₅ , SrO, BaO, Total) Determination of Major Oxides by Lithium Metaborate/Lithium Tetraborate Fusion and XRF.
ME-XRF26	SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , CaO, MgO, Na ₂ O, K ₂ O, Cr ₂ O ₃ , TiO ₂ , MnO, P ₂ O ₅ , SrO, BaO, Total) Determination of Major Oxides by Lithium Metaborate/Lithium Tetraborate Fusion and XRF.
OA-GRA05	LOI Loss on Ignition
OA-GRA05x	LOI Loss on Ignition.
OA-GRA06	LOI Loss on Ignition.
OA-VOL08	Fizz Rating, NP, MPA, NNP, Ratio (NP:MPA) Acid Base Accounting.
OG46	Ag, Cu, Mo, Pb and Zn - Determination of Ores and High Grade Material Using ICP-AES Following an Aqua Regia Digestion
OG62	Ag, Cu, Co, Mo, Ni, Pb and Zn-Determination of Ores and High Grade Material Using ICP-AES Following a Four-Acid Digestion
PGM-ICP	Determination of Au, Pt and Pd by Lead Collection Fire Assay and ICP-AES
S-IR08	S) Determination of Total S by Leco Furnace and Infrared Spectroscopy.

Notes:

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CAN-P-1579: Requirements for the Accreditation of Mineral Analysis Testing Laboratories

CAN-P-4E (ISO/IEC 17025): General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025-2005)

Chantal Guay, ing., P. Eng.
Vice President, Accreditation
Services

Date: 2017-01-16

Number of Scope Listings: 26

SCC 1003-15/722

Partner File #0

Partner: SCC