



Actlabs MEXICO

MINERAL EXPLORATION SERVICES
2022

ISO 9001:2015 CERTIFIED



Actlabs is a Canadian ISO 17025, ISO-9001 and NELAP accredited Laboratory with over 30 years of experience and 15 laboratories located globally, where gold and metals analysis are performed locally.

Actlabs Mexico's high-volume assay facility in Zacatecas became operational in 2010 with over 1500 square meters of working space, offering Sample Preparation, Fire Assay, AAS, and ICP-OES analysis to the local mining and exploration industry.

Actlabs Mexico is certified under the ISO 9001: 2015 quality standard, which guarantees our certificates are valid to meet the NI 43-101 requirements for mineral resources and reserves certification. At the moment, **this facility is preparing ISO 17025 certification, with a 70% advance**, since it has been participating since 2012 in international inter-laboratory quality tests (Round Robin) 2 times a year.

This state-of-the-art facility provides services to various mining and exploration companies in **Mexico, Colombia, United States, Namibia, Canada** among other countries, to their full satisfaction.

Actlabs Mexico offers full service with:

- ✓ **Fast turnaround time**
- ✓ Best quality and ISO certification
- ✓ Capacity of ~1000 samples/day
- ✓ Sample preparation
- ✓ **Fire Assay with AAS and gravimetric finish**
- ✓ **Aqua Regia, 3-acids and 4-acids digestion with ICP-OES or AAS finishes**
- ✓ Eco-friendly state-of-the art ventilation and dust collection System
- ✓ **Laboratory located in Zacatecas mining district, central Mexico.**
- ✓ Sample Transportation (upon request)
- ✓ Chain of custody (upon request)
- ✓ On-site mine lab managing
- ✓ On-site mobile lab set up

Quality analyses and innovative technologies are the principles that cultivate and maintain the Activation Laboratories group through its **international division, with laboratories in Colombia, Mexico, Guyana, Burkina Faso and Namibia.**



In Actlabs Mexico's we provide technical assistance for your mineral analytical needs thanks to our team with over 30 years of experience. **Special methods and discount can be provided following project and sample volume discussion.**

Sample Preparation

Code	Description
RX1	Dry, Crush, and Pulverize up to 5 kg (crush 80% 10 mesh, pulv. 95% 150 mesh)
RX3	Oversize charge per kilogram for crushing
RX4	Pulverization only
S1	Drying (60°C) and sieving (-177 µm) save all portions
Mesh check	Mesh control check
RX16	Specific gravity on core
RX16-W	Specific gravity (WAX) on friable samples
% Moisture	Sample Moisture
CSRM	Customized Standard Reference Materials

Our **Sample Preparation pricing is all-inclusive** including: sorting, drying, labeling, new reject bags, using cleaner sand between each sample and crushing samples up to 5 kg.

Precious Metals Analysis

Code	Description	Range
1A2	Au Fire Assay, Atomic Absorption (AAS), 30g	5 – 10,000 ppb
1A2-50	Au Fire Assay, Atomic Absorption (AAS), 50g	5 – 10,000 ppb
1E-Ag	Ag Aqua Regia, ICP-OES, 0.5 g	0.2 – 100 ppm
1A3-30	Au Fire Assay, Gravimetric, 30g	0.03 - 10,000 g/T
1A3-50	Au Fire Assay, Gravimetric, 50g	0.03 - 10,000 g/T
1A3-Ag	Au, Ag Fire Assay, Gravimetric, 30 g	Au: 0.03 - 10,000 g/T Ag: 3 - 10,000 g/T
8-Ag	Ag Fire Assay – Gravimetric, 30 g	3 – 10,000 g/T
1A4-500*	Au Fire Assay, Metallic Screen, Grav, 500g	0.03 - 10,000 g/T
1A3-C	Au Fire Assay, Grav, Concentrates	> 1,000 g/T
1A3-Ag-C	Au,Ag Fire Assay, Grav, Concentrates	Au, Ag: > 1,000 g/T



* A representative 500g or 1000g sample split is sieved at 149µm, with assays performed on the entire +149 µm fraction and two splits of the -149 µm fraction. It is important not to over pulverize the sample too finely; as tests have shown gold will plate out on the mill and be lost. When assays have been completed on the coarse and fine portions of the bulk sample, a final assay is calculated based on the weight of each fraction.

Multielemental Assays for high grade ores

8-AR	Aqua Regia Digestion AAS	8-4A	4-acid Digestion AAS
Element	Detection limits	Element	Detection limits
Ag	3-1000 ppm	Ag	3-1000 ppm
Cu	0.001%	Cu	0.001%
Pb	0.003%	Pb	0.003%
Zn	0.001%	Zn	0.001%
Ni	0.003%	Ni	0.003%
Fe	0.003%	Fe	0.003%
Co	0.003%	Co	0.003%
Cd	0.003%	Cd	0.003%
Mo	0.003% (ICP-OES)	Mo	0.003% (ICP-OES)



Note: Extraction of each element by Aqua Regia and 4-acid is dependent on mineralogy. Prices are for geological exploration samples. Ask for prices for metallurgical samples, such as concentrates, solutions and others.

MEXICO SERVICES MULTIELEMENTAL ANALYSIS ICP-OES



In Actlabs Mexico we offer multielement analysis by **Aqua Regia "partial"** digestion and **4-acid "near total"** digestion with **ICP-OES finish**.

Actlabs Mexico's high-volume assay facility in Zacatecas became operational in 2010 and offers Sample Preparation, Fire Assay, AA, and ICP-OES analysis to the local mining and exploration industry with **fast turn around time and the best quality**.

Aqua Regia "Partial" Digestion

This digestion uses a combination of concentrated hydrochloric and nitric acids to leach sulphides, some oxides and some silicates. Mineral phases which are hardly (if at all) attacked include barite, zircon, monazite, sphene, chromite, gahnite, garnet, ilmenite, rutile and cassiterite.

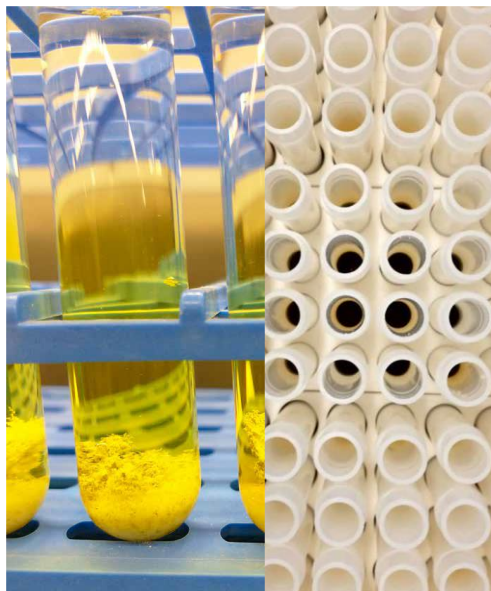
The balance of silicates and oxides are only slightly to moderately attacked, depending on the degree of alteration. Generally, but not always, most base metals and gold are usually dissolved.

4-Acid "Near Total" Digestion

This acid attack is the most vigorous digestion and uses hydrochloric, nitric, perchloric and hydrofluoric acids. Even with this digestion, certain minerals (barite, gahnite, chromite, cassiterite, etc.) may only be partially dissolved or stable in solution.

Other minerals including zircon, sphene and magnetite may not be totally dissolved. Most other silicates will be dissolved; however, some elements will be erratically volatilized, including As, Sb, Cr, U and Au.

Near-Total digestion cannot be used to obtain accurate determinations of REE, Ta, Nb, As, Sb, Sn, Hg, Cr, Au and U.



Note: Results from acid digestions may be lab dependent or lab operator dependent. Actlabs has automated this aspect of digestion using a microprocessor designed hotbox to accurately reproduce digestion conditions every time.

Extraction of each element by digestions is dependent on mineralogy
+ Sulphide sulphur and soluble sulphates are extracted

Values are in PPM, unless otherwise noted

Package	Aqua Regia 1E3		4-Acid 1F2	
	Element	Range (ppm)	Range (ppm)	
Ag	0.2	100	0.3	100
Al	0.01	10%	0.01	50%
As	2	10,000	3	5,000
Au	-	-	-	-
B	10	10,000	-	-
Ba	10	10,000	7	1,000
Be	0.5	1,000	1	10,000
Bi	2	10,000	2	10,000
Ca	0.01	10%	0.01	70%
Cd	0.5	2,000	0.3	2,000
Ce	-	-	-	-
Co	1	10,000	1	10,000
Cr	1	10,000	1	10,000
Cs	-	-	-	-
Cu	1	10,000	1	10,000
Dy	-	-	-	-
Er	-	-	-	-
Eu	-	-	-	-
Fe	0.01	30%	0.01	50%
Ga	10	10,000	1	10,000
Gd	-	-	-	-
Ge	-	-	-	-
Hf	-	-	-	-
Hg	1	10,000	-	-
Ho	-	-	-	-
In	-	-	-	-
K	0.01	10%	0.01	10%
La	10	10,000	-	-
Li	-	-	1	10,000
Lu	-	-	-	-
Mg	0.01	25%	0.01	50%
Mn	5	100,000	1	100,000
Mo	1	10,000	1	10,000
Na	0.001	10%	0.01	10%
Nb	-	-	-	-
Nd	-	-	-	-
Ni	1	10,000	1	10,000
P	0.001	5%	0.001	10%
Pb	2	5,000	3	5,000
Pr	-	-	-	-
Rb	-	-	-	-
Re	-	-	-	-
S +	0.001	20%	0.01	20%
Sb	2	10,000	5	10,000
Sc	1	10,000	4	10,000
Se	-	-	-	-
Sm	-	-	-	-
Sn	-	-	-	-
Sr	1	10,000	1	10,000
Ta	-	-	-	-
Tb	-	-	-	-
Te	1	500	2	10,000
Th	20	10,000	-	-
Ti	0.01	10%	0.01	10%
Tl	2	10,000	5	10,000
Tm	-	-	-	-
U	10	10,000	10	10,000
V	1	10,000	2	10,000
W	10	200	5	10,000
Y	1	1,000	1	1,000
Yb	-	-	-	-
Zn	2	10,000	1	10,000
Zr	1	10,000	5	10,000

Actlabs Mexico is ISO 9001: 2015 certified and the facility is in the process to get ISO/IEC 17025:2017 certified, with an estimate of completion for February 2023.

This facility also participates twice a year in Quality Testing Program conducted by the Standard Council of Canada (PTP-MAL) and Geostats, also known as **international Round Robins.**

ZERTIFIKAT · CERTIFICATE · 認證證書 · СЕРТИФИКАТ · CERTIFICADO · CERTIFICAT



CERTIFICATE

The Certification Body of
TÜV SÜD AMERICA INC.

hereby certifies that



Actlabs México, S.A. de C.V.
Cantera No. 3200, Conjunto Industrial de la Plata,
Guadalupe, Zacatecas 98604 Mexico

Has Implemented a Quality Management System in accordance with:

ISO 9001:2015

The scope of this Quality Management System Includes:

**Mineral Analysis Lab for Geological
and Mining Samples**

Certificate Expiry Date: July 25, 2025

Certificate Registration No: 951 19 4528

Issue Date: July 26, 2022

Reissue Date: N/A




Greg Bates
Director Business Assurance America



TÜV SÜD America Inc. • 401 Edgewater Place, Suite 500 • Wakefield, MA 01880 USA • www.TUVSUD.com
The validity of this certificate is contingent on the company maintaining its management system to the requirements of the indicated standard and is subject to regular monitoring by TÜV SÜD America.



ACTLABS MEXICO S.A. DE C.V.

CALLE CANTERA # 3200, CONJUNTO INDUSTRIAL DE LA PLATA, GUADALUPE, ZACATECAS, C.P 98604, MEXICO
TEL: (+52) 492 998 1091 | FAX: (+52) 492 998 1092 | E-MAIL: MEXICO@ACTLABS.COM
ACTLABS GROUP WEBSITE: [HTTP://WWW.ACTLABS.COM](http://WWW.ACTLABS.COM)

ACCREDITATION



Our Global Headquarters, located in Ancaster, Ontario, Canada, has the most comprehensive scope of accreditation for mineral testing in the industry. **Actlabs is ISO/IEC 17025:2017 accredited, ISO 9001:2015 certified, SCC GMP/GLP Compliant Facility, Health Canada Licensed (Ancaster, Ontario), OMAFRA Soil Testing Lab Accredited, and FDA Registered and Inspected.**



TESTING AND CALIBRATION LABORATORY ACCREDITATION PROGRAM (LAP)

Scope of Accreditation

Accredited Laboratory No. 266

Legal Name of Accredited Laboratory: ACTIVATION LABORATORIES LTD.

Contact Name: Rob Deakin

Address: 41 Bittern Street
Ancaster, ON
L9G 4V5

Telephone: 905 648 9611 Ext: 4220

Fax: 905 648 9613

Website: www.actlabs.com

Email: robdeakin@actlabs.com



Health
Canada



SCC File Number:	15308
Accreditation Standard(s):	ISO/IEC 17025:2017
Fields of Testing:	Chemical/Physical Mechanical/Physical
Program Specialty Area:	Agriculture Inputs, Food, Animal Health and Plant Protection (AFAP) Environmental Testing (ET) Forensic Mineral Analysis
Initial Accreditation:	1998-02-27
Most Recent Accreditation:	2022-03-19
Accreditation Valid to:	2028-02-26

SCC GROUP ACCREDITATION

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

- Activation Laboratories Ltd., Thunder Bay, Ontario, Accredited Laboratory No. 673
- Activation Laboratories Ltd., Kamloops, BC, Accredited Laboratory No. 790
- Activation Laboratories Ltd., Timmins, Ontario, Accredited Laboratory No. 799



SERVICES IN CANADA



Additional **extensive laboratory services** for Mineral Exploration, Mining and Environmental and other industries are available at our Headquarters, in Ancaster, Ontario, Canada.

In our **International Schedule of Services** you can find description and prices of these services, including:

- ✓ Sample Preparation
- ✓ Precious Metals Geochemistry
- ✓ Trace Element Geochemistry & Digestion Specific Assays
- ✓ Control Analysis for Bullion and Concentrates
- ✓ Litho-geochemistry and Whole Rock Analysis
- ✓ Hydrogeochemistry
- ✓ Biogeochemistry
- ✓ Exploration Techniques for Specific Deposit Types
- ✓ Applied Mineralogy & Metallurgy
- ✓ **Customized Standard Reference Materials**
- ✓ Exploration Techniques for Blind Mineralization:
 - ✓ SGH, OSG, Selective Extractions, Sequential Leaches
- ✓ Enviromining and Acid Base Accounting (ABA)
- ✓ Mobile Sample Prep & On-site Lab Services
- ✓ Heavy Mineral Concentrates by Thermal Irradiation
- ✓ Geochronology
- ✓ Radionuclides and Isotopic Analysis

We are happy to discuss your project with you to see how we can help you with your analytical needs.

Best regards,

Ing. Kevin Gomez
VP International
Activation Laboratories Ltd. (Actlabs)
Cell: +59.2.678.3512
KevinGomez@actlabs.com

Dr. Carla Abarca
Mining & Exploration Associate
Activation Laboratories Ltd. (Actlabs)
Cell: +1.289.456.9439
CarlaAbarca@actlabs.com



ACTLABS LOCATIONS



CANADA

MAIN LABORATORY (GLOBAL HEADQUARTERS)

Activation Laboratories Ltd.
(Actlabs) 41 Bittern Street Ancaster
Ontario L9G 4V5 CANADA
Tel: +1.905.648.9611
Toll Free: 1.888.228.5227
Fax: +1.905.648.9613
Email: ancaster@actlabs.com
ISO/IEC 17025, Health Canada
OMAFRA

Actlabs Kamloops

9989 Dallas Drive Kamloops, British
Columbia V2C 6T4 CANADA Tel:
+1.250.573.4484
Email: kamloops@actlabs.com
ISO/IEC 17025

Actlabs Timmins

1752 Riverside Drive
Timmins, Ontario P4R 1N1 CANADA
Tel: +1.705.264.0123
Email: timmins@actlabs.com
ISO/IEC 17025

Actlabs Thunder Bay

1201 Walsh Street West
Thunder Bay, Ontario P7E 4X6
CANADA
Tel: +1.807.622.6707
Fax: +1.807.622.6571
Email: tbay@actlabs.com
ISO/IEC 17025

Actlabs Dryden

264 Government Road
Dryden, Ontario P8N 2R3 CANADA
Tel: +1.807.223.6168
Fax: +1.807.223.6954
Email: dryden@actlabs.com
ISO 9001:2008

Actlabs Geraldton

801 Main Street, P.O. Box 999
Geraldton, Ontario P0T 1M0
CANADA
Tel: +1.807.854.2020
Email: geraldton@actlabs.com
ISO 9001:2015

Actlabs North Bay

191 Booth Road, Unit #18
North Bay, Ontario P1A 4K3
CANADA
Tel: +1.705.476.1066
Email: northbay@actlabs.com

Actlabs Fredericton

245 Hilton Road Suite 25A
Fredericton, New Brunswick E3B
7B5 CANADA
Tel: +1.506.472.2831
Fax: +1.506.472.0111
Email: fredericton@actlabs.com

Actlabs Val d'Or

150 Rue Georges Dumont
Val-d'Or, Québec J9P 7B2
CANADA
Tel.: +1.819.824.2777
Email: valdor@actlabs.com

Actlabs Ste-Germaine-Boulé

184, rue Principale, P.O. Box 208
Ste-Germaine-Boulé, Abitibi,
Québec J0Z 1M0 CANADA
Tel: +1.819.787.6116
Fax: +1.819.787.6527
Email: stegermaine@actlabs.com
ISO/IEC 17025

MEXICO

Actlabs Mexico S.A. de C.V

Calle Cantera # 3200
Conjunto Industrial de la Plata
Guadalupe, Zacatecas C.P 98604
MEXICO
Tel: +52.492.998.1091
Fax: +52.492.998.1092
Email: mexico@actlabs.com
ISO 9001:2015

COLOMBIA

Actlabs Colombia S.A.S.

Zona Franca Rionegro
#172 & 173 Vereda Chachafrito –
Rionegro Antioquia, COLOMBIA
Tel: +57.604.424.2860
Email: colombia@actlabs.com
ISO 9001:2015

GUYANA

Actlabs Guyana

27/28 Parcel Beterverwagting
Industrial Area,
East Coast Demerara, GUYANA
Tel./Fax: 59.2.220.2311
Email: guyana@actlabs.com
ISO 9001:2015

BURKINA FASO

Actlabs Burkina Faso SARL

Rue Warba PK1 Ouest N-6 Sect. 16
09 BP 120 Ouagadougou 09
BURKINA FASO
Tel: +226.25.38.5353
Mobile Tel: +226 78.21.9219 Mobile
Tel: +226.72.83.9314
Email: burkina@actlabs.com
ISO 9001:2015

NAMIBIA

Actlabs Namibia (PTY) Ltd.

267 Cobalt Street, Prosperita,
Windhoek P.O. Box 35258, Kleine
Kuppe, Windhoek, NAMIBIA
Tel: (+264) (0)61 231010
Fax: (+264) (0)61 231013
Email: namibia@actlabs.com

