

METALLURGICAL CAPABILITIES IN VANCOUVER

Delivering Technical Expertise in Vancouver



With nearly 80 years experience of metallurgical experience in Canada and a global footprint, SGS has earned the trusted reputation as the leading supplier of proven, technologically advanced metallurgical services. We provide companies and mines with bankable flowsheets and practical technical solutions.

For over 10 years, our metallurgical facility strategically located in Vancouver has been providing a gateway into unlocking the technical expertise required for projects based in Western Canada and around the world to excel.

Our Vancouver metallurgical facility is staffed by specialists who are experts in their fields, bringing decades of industry experience to your project. These professionals have practical experience with all the major physical and chemical separation processes used in the recovery of precious and base metals from ores and concentrates. Our metallurgical facility in Vancouver offers a wide range of metallurgical support including:

MINERAL PROCESSING

FLOTATION

Flotation is one of the most extensively used and adaptable mineral processing techniques. The flotation process ultimately produces a saleable concentrate from both simple and complex ores. Bench scale flotation test programs generate parameters including flowsheet design, flotation kinetics, reagent schemes and optimization and grind size. Our flotation capabilities include:

- Bench-scale Flotation Equipment
- Mineral Flotation Test (MFT)
- Column Flotation
- Mini-pilot Testing



BENCH-SCALE COMMINATION

With grinding circuits typically being the largest or second largest capital investment for a mine, it is vital that the grinding circuit is correctly designed, without arbitrary safety margins, to ensure positive project economics. We offer several comminution tests that have been created to design grinding circuits or optimize existing operations including:

- Crushing, Grinding and Screening
- SAG Power Index (SPI)
- Bond Ball Mill Work Index (BWI)
- Bond Rod Mill Work Index (RWI)
- Bond Low Energy Impact
- Abrasion Index
- Modified Bond Ball Mill Test (ModBond)
- JK Drop-weight Test
- SMC

BENEFICIATION

Beneficiation is the process where ore is reduced in size and gangue separated from the ore. Separation of certain minerals can be efficiently achieved by taking advantage of the physical and magnetic properties which includes:

- Scrubbing
- Hydro Separation
- Cycloning / Desliming

Magnetic Separation

- Davis Tube
- SATMAGAN
- High Intensity Dry Magnetic Separator
- Low Intensity Wet Magnetic Separator



Gravity Separation

- Gravity Recoverable Gold (GRG and E-GRG)
- Spirals
- Mozley Table
- Falcon Separator
- Wilfley Table
- Heavy Liquid Separation

Size Classification

- Screens / Sieves
- Cyclosizer
- Malvern (Laser PSA)

Ore Sorting Sample Preparation

EXTRACTIVE METALLURGY

GOLD EXTRACTIVE METALLURGY

Ensuring that you have a complete understanding of your gold deposit, its variability within the ore and the metallurgical unit operations best suited to sustainable processing is vital to ensure your gold recovery is maximized. Our gold extractive metallurgy capabilities include:

- Bottle Rolls
- Atmospheric Leaching
- Column Leaching
- Bioleaching
- Pressure Oxidation
- Cyanide Destruction / Recovery
- Thiosulfate Leaching

HYDROMETALLURGY

Hydrometallurgy has evolved, both as an alternative to and a complementary method for the pyrometallurgical recovery of metals. It eases the recovery of value metals from ores containing impurities that can produce high melting point slags. Hydrometallurgy also makes it economically viable to recover metals on a smaller scale and from sulfide ores without producing acid. Our hydrometallurgy capabilities include:

- Atmospheric and Pressure Leaching
- PLATSOL
- Product Purification
 - o Selective Precipitation
 - o Solvent Extraction
 - o Ion exchange



SOLID-LIQUID SEPARATION

Solid-liquid separation deals with the separation of liquids and finely divided insoluble solids. Effective solid-liquid separation is important to overall plant performance and may represent a substantial capital investment and operating and maintenance costs for a plant. Our solid-liquid separation capabilities include:

- Static and Dynamic Thickening
- Pressure and Vacuum Filtration
- Rheology

MINERALOGY

Mineralogy is the expert quantitative study of minerals using manual and automated techniques. Our mineralogy experience spans a wide range of elements, commodities and deposit types. We provide testing for a multitude of applications – from exploration, through to production, environmental applications and mine closure. Our mineralogy capabilities include:

Services

- Exploration Mineralogy
- Process Mineralogy
 - o Predictive Mineralogy
 - o Gold Characterization and Deportment
- Plant Support Mineralogy
- Environmental Mineralogy

Equipment

- QEMSCAN
- X-Ray Diffraction (XRD)
- Scanning Electron Microprobe (SEM)
- Optical Microscopy
- Heavy Liquid Separation

Additional Capabilities

- Tescan Integrated Mineral Analyser (TIMA-X)
- Electron Microprobe Analysis
- Laser Abrasion
- SIMS (Dynamic and TOF)
- FTIR

MINI PILOT PLANT TESTING

Pilot plant testing is used to demonstrate and confirm that the flowsheet developed at the bench is viable. SGS pilot plants are unique in that they operate in an integrated fashion. Our pilot plant capabilities include:

- Crushing / Screening
- Magnetic Separation
- Gravity Separation
- Flotation
- Water Treatment
 - o High Density Sludge
 - o Nanofiltration
 - o Ion Exchange Membranes

ENVIRONMENTAL SERVICES

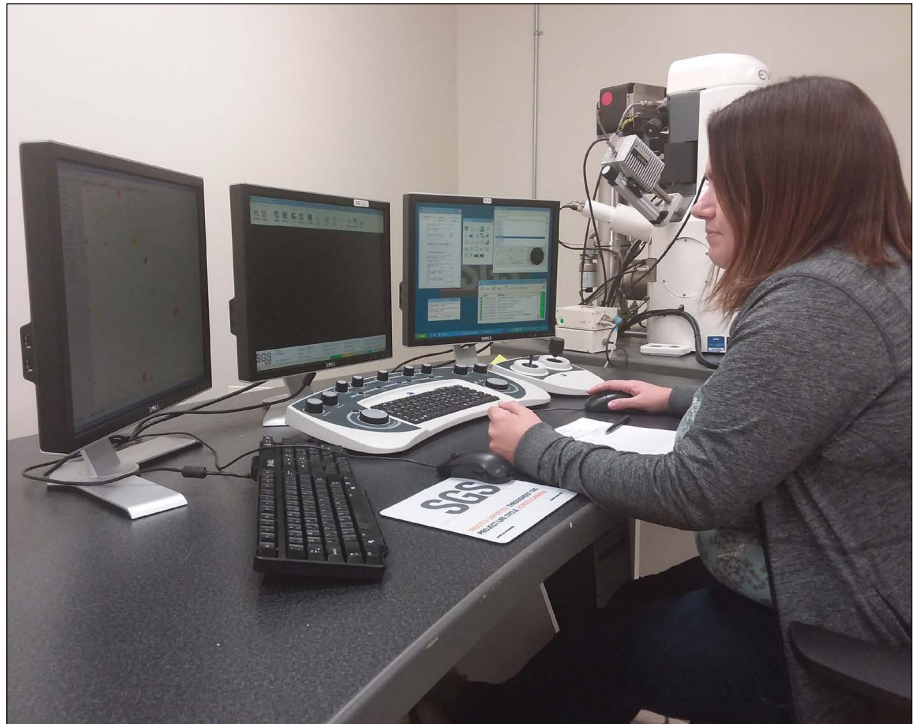
Understanding the acid-producing potential of your tailings, ores and waste rock on your site as well as predicting the problems and preventing long-term environmental liabilities are necessities for any mining project. Establishing preventative strategies and practical solutions to reduce the overall environmental impact of your project is essential for project success. Our environmental services include:

- ARD Testing
 - Static Testing
 - Kinetic Testing
- Water Treatment Solutions

ADDITIONAL CAPABILITIES ACROSS THE SGS GLOBAL NETWORK

Through our global network including two additional locations in Canada, our team in Vancouver can also provide additional resources including:

- Geological Services
 - Machine Learning
 - Technical Reports & QP Support
- Geometallurgy
 - CEET, FLEET, Production Optimization, IGS simulations
 - Geostatistics
 - Domaining
 - Production Forecasting
- Engineering Design
- Plant Operations and Audits
- Full Chemistry Laboratory



MULTI-PURPOSE LABORATORY IN VANCOUVER

In addition to our metallurgical capabilities in Vancouver, our facility in Vancouver provides:

- Geochemical Analysis
- Agricultural Services
- Oil, Gas and Chemicals Services
- Trade Support

With supporting Canadian metallurgical facilities in Lakefield, Ontario and Québec City, Québec, as well as access to an integrated global network of affiliate laboratories, our Vancouver metallurgical facility is connected to the entire SGS Minerals network and therefore leverages our extensive metallurgical capabilities to develop and enhance your exploration and mining projects.

For over 10 years, our team in Vancouver has demonstrated success in metallurgical and process design. We have provided our clients with effective flowsheets and practical technical solutions to their processing problems. Contact our team today to learn how we can help you with all your metallurgical requirements to help your project reach its full potential.

CONTACT INFORMATION



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WHEN YOU NEED TO BE SURE

SGS