Bureau Veritas Minerals

Metallurgical Testing and Mineralogy

“Industry Leading Solutions for the Exploration & Mining Community”
Bureau Veritas Minerals Metallurgical Division offers a full range of metallurgical and mineralogical services from bench scale testing to continuous pilot plant operation. We provide complete metallurgical testing investigative packages from the early exploration phase through scoping, pre-feasibility and feasibility process development for flowsheet design and bankable feasibility.

**Mineral Processing**

Our Mineral Processing Laboratories are fully equipped to perform all metallurgical investigations required for ore evaluation and mill design. Testing services include:

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<th>Comminution</th>
<th>Flotation</th>
<th>Magnetic Separation (wet &amp; dry, variable intensity)</th>
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<tbody>
<tr>
<td>Crushing, Grinding, Bond Rod &amp; Ball Mill Work Index, Abrasion Index, Size Classification &amp; Screening, Starkey SAG Design Test</td>
<td>Batch, flotation tests, Locked cycle tests, Column flotation, Special gas media flotation, Reverse &amp; flash flotation, Agglomeration flotation</td>
<td>Drum separator, Belt separator, High gradient separator</td>
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<th>Gravity Concentration</th>
<th>Solid-Liquid Separation</th>
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<td>Jigs, Shaking tables, Elutriation, Spirals, Cone, Heavy media cones, Centrifugal heavy media separation, Centrifugal concentrators (Falcon and Knelson), Mozley Separator</td>
<td>Standard thickening procedures, Differential settling, Vacuum &amp; pressure filtration</td>
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**Environmental**

As a continuation of the mineral processing, circuit design and permitting sequence, Bureau Veritas Minerals conducts a number of ore, tailings and waste related environmental tests, including the follows:

- ARD static and kinetic testing
- Acid-Base accounting
- Cyanide regeneration and/or destruction
- Humidity cell tests

**Hidrometallurgy**

We have extensive laboratory facilities to conduct a wide range of hydrometallurgical and bio-hydrometallurgical studies. These include the full scale up from individual batch test through continuous bench tests to commercial sized pilot plant reactors. Testing capabilities include:

- Cyanidation studies (Merril Crowe, CIP &CIL procedures)
- Pressure leaching
- Bottle roll and tank leaching
- Counter current closed circuit tank leaching
- Biological heap leach simulation
- Diagnostic/sequential leaching
- Solvent extraction
- Ion exchange
- Electrowinning
- Differential precipitation
- Bio-oxidation of refractory gold ores and concentrates
- Biological leaching of base metal ores and concentrates
- Cyanide and ammonia detoxification
- Standard electrowinning technology
- Galvanox copper recovery process
BUREAU VERITAS MINERALS- Metallurgical Division

Metallurgical Assaying
Bureau Veritas Minerals now has a completely independent assay laboratory dedicated to the specialized analytical and rapid turn-round requirements of the testing laboratory. Analytical services provided included: fire assay, ICP, AA, classical wet assay, XRF, speciation packages, and environmental analysis.

Pilot Plant
A complete ore treatment pilot plant, can be assembled for any circuit combination, from crushing through to final product with throughput ranging from 1 to 5 tonnes per day, depending on ore hardness.

Mineralogical & Petrographic
Our state-of-the-art laboratory provides full QEMSCAN, MLA-Express and optical packages including Bulk Mineral Analysis (BMA), Particle Mineral Analysis (PMA), Trace Mineral Search (TMS) and Sparse Phase Liberation (SPL) from both polished and thin sections prepared on-site.

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### Mineralogy and Petrographic Packages

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Mineralogical & Petrographic Packages:

- **Bulk Mineral Analysis (BMA)**
- **Particle Mineral Analysis (PMA)**
- **Trace Mineral Search (TMS)**
- **Sparse Phase Liberation (SPL)**
- **Mineral Grain Size**
- **Rock Texture and Type**
- **Photo Images**

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Analytical services provided include:

- **Fire Assay**
- **ICP**
- **AA**
- **Classical Wet Assay**
- **XRF**
- **Speciation Packages**
- **Environmental Analysis**

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Pilot Plant:

- A complete ore treatment pilot plant can be assembled for any circuit combination, from crushing through to final product with throughput ranging from 1 to 5 tonnes per day, depending on ore hardness.

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Mineralogical & Petrographic Studies:

- **Preliminary Petrographic description from thin sections**
- **Mineralographic Description from polished sections**
- **Combined Petrographic & Mineralographic**