

# ERIEZ



## MINERAL LABORATORY SERVICES

TESTING & ANALYTIC SERVICES FOR MINERAL  
PROCESSING TECHNOLOGIES



**ERIEZ**  
GLOBAL LEADER IN SEPARATION TECHNOLOGIES

## About Eriez

Established in 1942, Eriez stands as a pioneering force in separation technologies, embodying a truly global presence.

With 12 wholly owned subsidiaries spread across the globe, we proudly design, manufacture, and support our magnetic separation, flotation, metal detection, and material handling equipment on an international scale.

Our dedicated team of knowledgeable and experienced sales engineers collaborates closely with customers, understanding their unique challenges to deliver dependable, high-performance equipment, systems, and solutions.

Whether clients require our standard equipment or bespoke solutions tailored to their precise specifications, Eriez delivers.

Drawing from more than 80 years of experience across diverse industries, including mining and minerals processing, food processing and packaging, aggregates, metals recycling, and many other sectors, Eriez leverages its extensive experience to design and supply products that elevate productivity, efficiency, and product purity.

Eriez remains steadfast in its commitment to setting the global standard for excellence in key technologies, driving innovation and reliability across industries worldwide.

# Eriez Mineral Laboratory

Eriez has a state-of-the-art laboratory facility based in Erie, Pennsylvania dedicated to advancing mineral processing technologies. Backed by our team of engineers, the lab is positioned to offer comprehensive testing and analytical services for a wide range of mineral processing applications. Our mission is to:

- Increase the safety and profitability of your operation by optimizing the process flowsheets designed to lower OPEX and CAPEX
- Improve plant efficiency and alleviate environmental challenges
- Solve processing bottlenecks and challenges in fine and coarse flotation circuits
- Utilize our vast experience in brownfield as well as greenfield testing



Eriez Mineral Laboratory takes pride in delivering quality data in a timely manner to ensure proper equipment design benefiting your process. We follow industry set standards to validate the quality of our data. Key features of the Eriez' Mineral Laboratory include:

**Advanced Equipment:** The lab houses a variety of equipment, including crushers, grinding mills, screens, scrubbers, benchtop flotation cells, coarse and fine flotation cells, and magnetic separation equipment. This allows for the simulation and testing of complex plant circuits.

**Innovative Technologies:** Eriez is known for its groundbreaking flotation technologies such as the HydroFloat® for coarse particle recovery and the StackCell® high-intensity flotation cell, which enhance the efficiency and sustainability of mineral processing.

**Comprehensive Testing Services:** The lab provides detailed testing and analytical services, ranging from exploratory batch testing to the evaluation of multi-stage flotation circuits. In-house assays are performed with advanced analytical capabilities including X-ray fluorescence (XRF), induced coupled plasma optical emission spectroscopy (ICP-OES), fire assay, and combustion analysis for sulfur.

**Expert Staff:** The laboratory is staffed by highly qualified professionals with extensive experience in mineral processing, ensuring accurate and reliable results.

**Environmental Focus:** Eriez is committed to making mineral processing more efficient and less impactful on the environment, aligning with our vision of sustainable development.

## Our Technical Team has a Combined Experience of 60 Years in Processing of the Following Mineral Types

- Copper (Cu/Mo, Cu/Au)
- Iron Ore (Magnetite, Hematite, BHQ)
- Phosphate (Sedimentary and Igneous)
- Potash
- Rare Earth Elements (REEs)
- Heavy Mineral Sands
- Silica
- Polymetallic Minerals
- Bauxite
- Nickel
- Calcite
- Gold
- Lithium (Spodumene, Lepidolite)
- Oil Sands
- Coal
- Graphite
- Silver
- Feldspar





## Bench Scale Testing

Eriez metallurgists have developed years of expertise, performing test work using conventional bench-scale flotation cells. Each test program is conducted with the aim of developing or confirming an optimized chemical reagent suite and establishing a baseline flotation performance before progressing to further testwork utilizing Eriez' proprietary flotation technologies.

In bench scale flotation testing we conduct the following spectrum of tests (but not limited to):

- Reagent Chemistry Optimization
- Kinetics Analysis
- Locked Cycle Analysis
- Reagent Confirmation Tests
- Release Analysis
- Bulk Sample Generation Capability



## Fine Flotation Testing

Eriez' proprietary StackCell and CavTube column technologies provide improved metallurgical performance for fine and ultrafine particle flotation. Through the incorporation of high turbulent kinetic energy dissipation rates and counter-current wash water systems, these technologies address many of the challenges associated with conventional mechanical flotation cells. This results in improved fine particle recovery, higher concentrate grades, and lower total cost of ownership.

Fine particle flotation testing is carried out at Eriez' Mineral Laboratory utilizing proprietary lab-scale flotation cells that are reliably proven for commercial scale-up. The aim of such testing is to establish the grade vs. recovery relationship, utilizing the reagent suite established by bench-scale, conventional flotation testing. Fine particle flotation testing also is used to define and optimize operating parameters and flotation conditions. These include:

- Reagent dosages
- Froth carrying capacity
- Aeration rate
- Froth depth
- Residence time
- Wash water rate

Various flotation circuit configurations can be evaluated using Eriez' fully automated four-stage CavTube column flotation circuit. This includes the incorporation of recirculating process streams as applicable.



# Coarse Particle Flotation Testing

Eriez HydroFloat Coarse Particle Flotation (CPF) technology is the only commercialized flotation technology in the mining industry proven to efficiently recover coarsely liberated minerals and locked particles with <10% surface expression that are otherwise unrecoverable by conventional technology. This allows for a shift in the economic optimum grid size, in turn increasing profitability and improving the environmental sustainability of mining projects. Eriez' Mineral Laboratory is fully equipped to conduct CPF testing for all phases of project execution.

## The CPF Test Program Typically Consists of the Following Tests:

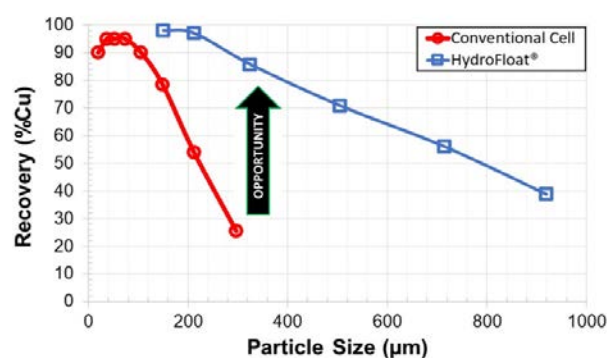
**Batch Scoping Test:** These tests are performed with 1.5-2Kg of feed material to scope out chemistry, feed conditioning and HydroFloat operating parameters.

**Steady-State Test:** These tests are conducted on a continuous basis to build Grade vs Recovery curve.

**Regrind and Cleaning Test:** The HydroFloat concentrate is reground to the liberation P80 depending on the application and undergoes extensive cleaning tests to define global circuit recovery at the target concentrate grade.



## The HydroFloat CPF Solution



Industrial rougher recovery by size data from a copper concentrator in South America (Conventional vs HydroFloat)



# Hydraulic Classification

Eriez' CrossFlow is a highly efficient hydraulic classifier for the separation of material based on particle size, shape, and/or density, which is based on hindered settling principles. This technology can also be used for desliming, counter-current washing and acid neutralization of minerals.

Eriez' Mineral Laboratory is equipped with CrossFlow separators of various sizes to process samples and determine separation efficiency for a given application. This approach facilitates direct and reliable scale-up to commercial processes, including determination of optimal elutriation water rate and fluidized bed level and/or density.

## Industrial CrossFlow® Applications

- Size Separation
  - Phosphate
  - Potash
  - Lithium
  - Heavy mineral sands
  - High-purity silica sands
  - Tungsten
- Density Separation
  - Iron ore
  - Coal
  - Heavy mineral sands
  - Garnet
  - Carbon
  - Metals Recycling
- Particle Shape Separation
  - Mica





# Analytical Capabilities

Eriez' Mineral Laboratory is resourced to provide quick assay turnaround during a testing program. The capabilities include:

## Sample Prep

- 2-Acid Digestion
- Microwave Digestion
- Fusion
- Pressed Pellet

## Precious Metal Testing

- Fire Assay

## Instrument Finish

- X-Ray Fluorescence (XRF)
- Atomic Absorption (AA)
- Inductively Coupled Plasma (ICP-OES)
- Sulfur Analysis via LECO



# Sample Preparation

The key to any lab project is a defined sample preparation scope. Our lab facility fully equipped with required infrastructure for preparing test samples ranging from a few kilos to a few tonnes. Our preparation program includes:



## Sample Characterization

- Homogenization (Cone and Quartering, Riffle Splitters, Slurry Splitters, etc.)
- Size-by-Size Analysis (Microtrac, Wet Screening)

## Comminution

- Jaw and Cone Crushing
- Rod/ball Continuous as well as Batch Milling

## Classification

- Dry and Wet Sample Screening
- Desliming with Hydrocyclones
- Hydraulic Classification (CrossFlow)

## Magnetic Separation

- Low Intensity Magnetic Separation (LIMS)
- Medium Intensity Magnetic Separation (MIMS)
- Wet High Intensity Magnetic Separation (WHIMS)

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