

**Supplemental Instructions and General Procedure for  
Comminution Experiment  
08-25-2011**

**Overview:**

Goal is to report size distribution, throughput, and losses for each crusher.

Report total copper recovered.

Assume ore is basalt.

**Precautions:**

The crushers and classifiers are motor-driven equipment and can maim you if operated with loose or missing guards. Check the condition of equipment before using.

Lock out the equipment before cleaning crushers, making adjustments, putting hands or fingers near moving parts of crushers, or any other service-related activities.

Keep hands and fingers out of crushers and away from any moving or rotating parts. Eliminate all entanglement hazards before starting. Use a brush or scoop to move material into the crusher, not your hands or fingers.

Use the dust collection system at all times when grinding and classifying ore.

Eye protection is required at all times.

Ear protection and a dust mask are required when operating crushers.

This experiment is going to produce dust and grit. Clean up the entire area at the completion of your experiment.

**General procedure:**

Starting with the Jaw Crusher, then Gyratory Crusher, then the Short Head Crusher, and finally the Roll crusher, reduce copper ore to 20 mesh size. It will take several passes through the Roll Crusher to reduce entire sample to less than 20 mesh. (Only recycle the material that doesn't pass 20 mesh.)

Weigh sample before and after each crushing operation and record the feed rate per discharge area for each crusher. Also record the particle size distribution for each crusher.

When using the Jaw Crusher, place the feed pan upside down over the ore to prevent any ore from flying out of the crusher.

When using the Gyratory Crusher, place a 5 gallon plastic pail upside down on top of the opening to prevent ore from flying out of the crusher.

The Jaw and Gyratory Crushers can be choke fed. The Short Head and Roll Crushers must be control fed in a stream of about  $\frac{3}{4}$ " diameter.

Classify entire sample when using the Gilson Classifier.

Use 500 gram sample for RoTap analysis.

Use Riffle Splitter to remix ore before using the next crusher.

Use the Rotary Splitter if you need more than one sample. Use turntable at 50% speed and vibratory feeder at 100%.

Be careful not to overfill sample drawers on crushers.