Procedure for Crushing Rock Samples for Whole Rock Analyses

Materials:
- Ziplock Bag
- Sharpie
- Plain computer paper (several pieces)
- Mesh
- Brush
- Sieve
- Acetone
- Di water
- Kimwipes
- Gloves
- Hammer

Part I: Jawcrusher (small and large)

The jawcrusher is used for fragments of rock that are too large to fit into the shatterbox. Since it has quick moving parts, **do not wear loose clothing while operating** and **tie back long hair**. Stay away from the moving parts; it is designed to destroy stronger stuff than any body parts that might get caught.

1. Check to see if sample is small enough to fit into mouth of crusher. If it is too large, go outside and smash down to size with hammer.

2. Turn on air compressor and let PSI build up. Be sure that valve on bottom is closed.

3. Clean jaw crushers and pan with air hose

4. Place clean pan underneath large crusher to catch crushed rocks

5. Turn on power to the large jaw crusher (large lever) and then crusher (light switch). Slowly drop rocks into mouth of crusher. You can use another pan to shield yourself from rocks that may shoot back up.

6. Turn off large jaw crusher (light switch and then large lever)

7. Place coarsely crushed sample in clean vesicle.

8. Check to make sure the pan is underneath small crusher and is clean.

9. Turn on the small jawcrusher with the switch on the front left side.

10. Slowly drop rocks into mouth of crusher. Again, be careful to avoid moving parts.

11. Turn off the crusher with the switch.

12. Remove sample from pan and place in clean coffee bag. Label it. Do not use a large coffee bag if your sample will fit in a small one. Place sample in other room.

13. Turn off the air compressor.

14. Use remaining pressure to clean the jawcrushers/pans. When you are finished, bleed off remaining air using the red button.

15. Open valve at bottom of compressor to let water drain.

16. Sweep floor.

Part II: Shatter Box

1. Clean off tables with wet paper towels.

2. Separate out the fraction you plan to crush by cone and quartering. Place the extra in a **labeled coffee bag**.

3. Label plastic bottle for powdered material. Handle 1 sample at a time in order to avoid contamination.

4. Get out a few pieces (3-4) of computer paper from the drawer next to the shatter box.

5. Use the non-chipped ceramic shatter box for this procedure (tungsten carbide is for mineral separate) located in the bottom.

6. Pour a fraction of sample on a sheet of paper. Push the puck in the shatter box to the edge in order to maximize gaps. Use the paper as a funnel to pour sample in shatter box. Fill **no more than 1/4th full**. Use brush to clean off the top of the puck (this material can be brushed into the shatter box).

8. Place the gasket and lid on shatter box and center the shatter box on the shaker.

9. Put clamp on and tighten until the shatterbox lid cannot rotate. You may have to use the hammer. If the lid moves (watch the stickers) when you turn on the shaker, STOP IMMEDIATELY and tighten.

11. Set the timer and turn it on. This will start the shaker.

12. Shake for about 5 minutes. After the change in the pitch (it goes higher), run for 1.5 minutes more, then turn off.

14. Remove the shatter box from the shaker. Open the lid and remove puck.

15. Pour the powdered rock onto paper. To remove the sample, tap the shatter box on the paper, so the rubber gasket touches the paper and not the metal edge, or the paper will rip.

16. Pour the powdered sample into the labeled bottle.

Part III: Cleaning

1. Blow out the shatter box with compressed air if needed.

2. Rinse everything with regular H_2O (tap water), then DI H_2O. Wipe down with Kimwipes.

3. For everything **but gasket**, use acetone to dry the shatterbox parts with Kimwipes, **do not put acetone on the gasket.** Try not to handle the clean parts with dirty hands (use Kimwipes as a barrier).

4. Place paper towels on the countertop and let the shatter box dry completely before placing back in drawer.

5. Throw away paper used with the sample and put everything else back where you found it.