Working Obsidian and Other Fragile Stones

Presentation to SCVGMS
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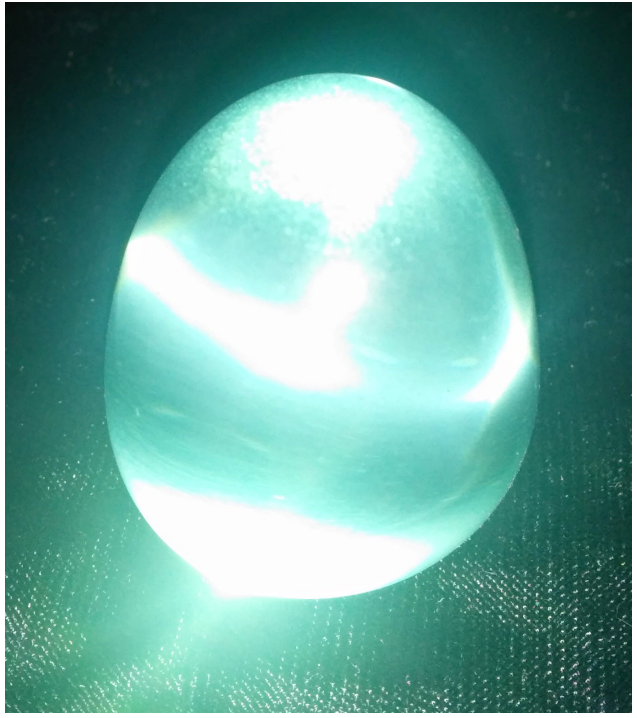
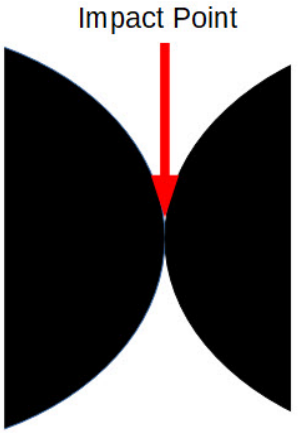
Working with Brittle, Glassy Stones, Obsidian, Volcano Glass, Rhyolite, Rose Quartz, etc.



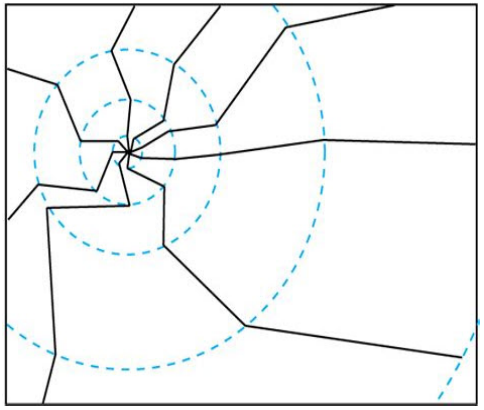
Rash or Bruising Occurs More on Curved Surfaces

High pressure at point contact makes cavities.

Bruised obsidian



Impact point between curved surfaces



Stress lines radiating from an impact point

Conical shatter hole

Mitigating Rash and Bruising

- Consider using grit and polish of the same color as the stone.
- Clean stones with:
  - Ultrasonic bath
  - Upholstery pressure sprayer
  - Dental water pick
  - Soapy burnishing tumbling with good cushioning
  - Soaking in vinegar or muriatic acid to dissolve scale
- Better to not let stones dry out, leaving calcified scale in holes (unless first rinsed in distilled water).
- Best to avoid rash by being gentle and not getting the micro cavities in the first place!

How to Work Rocks Gently

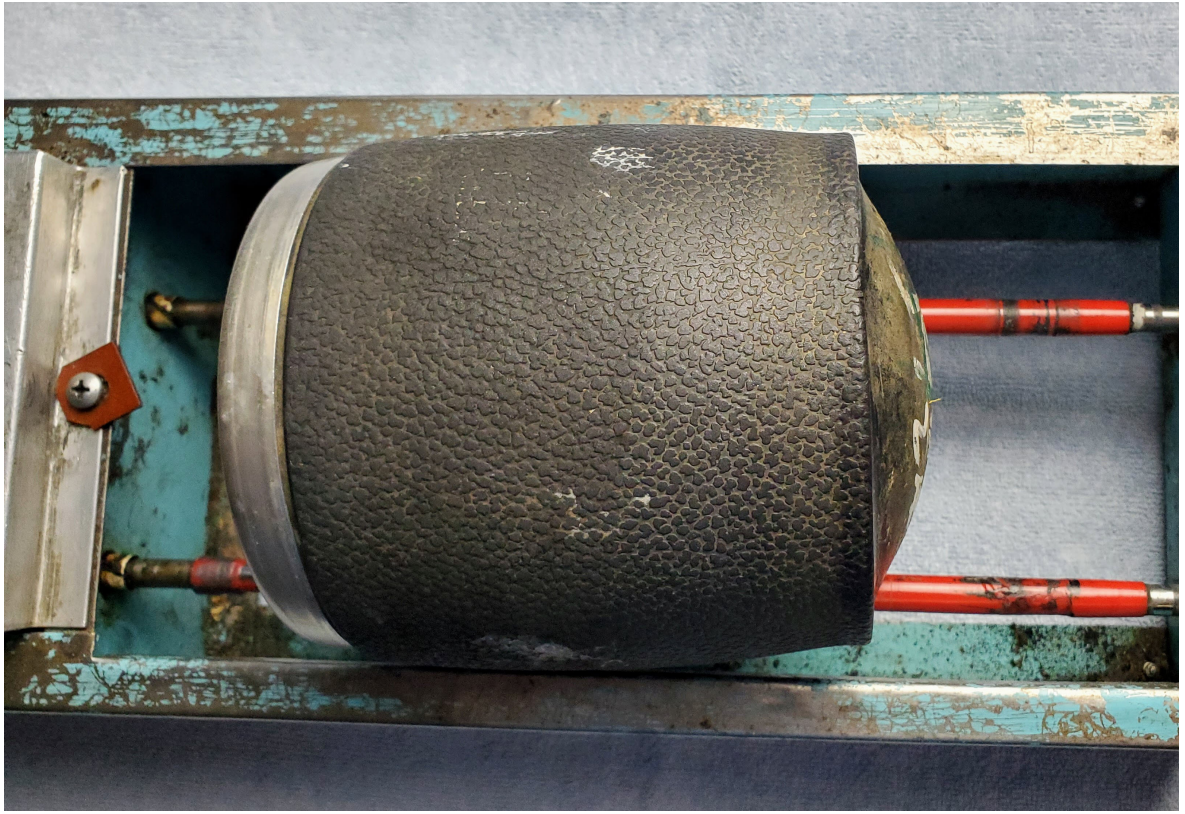
- Being gentle means it will take longer.
- Vibrating tumblers can be gentle, but can still let stones rap against each other too hard.
- Especially after coarse grinding, you want stones rubbing, not banging into each other, so use lots of media and water to cushion the rocks.
- "Over fill" barrels to cushion.
- Cushioning with extra water helps and does not present dissolving problems for glass.
- Best to have a slurry like half media and small stones.

Cushioning Stones with Thickened Liquid

Thickened solutions for cushioning may include:

- Soap
- Apple sauce
- Mineral oil
- Antifreeze (ethylene glycol)
- Cane sugar
- Sorghum
- Molasses
- Honey

Fermentation Disasters with Sugar or Honey



Given the right nutrients, honey ferments rapidly!

Media Types to Use and Not Use

Use

- Small obsidian stones
- Chunks of broken glass (but not quartz glass)
- Glass craft marbles
- Plastic beads
- Ceramic pellets
- Sand

Avoid After Coarse Grind

- Ceramic micro beads
- Chunks of broken quartz glass
- Quartz half inch gardening stones
- Gravel may have hard scratchy bits
- Quartz sand

Pre-grind any hard media to smooth its surfaces.

Dry tumbling media include corncob, walnut shells, garbanzos & rice.

Thermal Stress

- Heating and cooling cause stress.
- Slow cutting to prevent overheating.
- Annealing in a furnace or self-cleaning oven at 850 to 900 °F.
- Crossed polarized light can show stress lines. Disassembled LCD screens are a source of large polarizing sheets.

Single Stone Tumbling

- Needs gravel, sand, or lots of media to rub and to cushion.
- May not get much grit breakdown when tumbling a single stone.
- May need to use very fine polish, because of limited breakdown.

Grinding and Polishing

- SiC grit for 80, 220 and 500 grit, then Al Ox for 1,100 pre-polish and polish.
- SiC particles have jagged edges, and Al Ox has flat edges.
- Some of the cheaper Al Oxide polish is more like 2,000 grit.
- TXP or other 3 micron polishes work well.
- Rapid Polish 61 gives better shine in vib tumblers, but not for soft stones like turquoise.
- Some people are starting to find that using a quarter as much polish may work better.
- Proper polishing procedures are more important than polish type.
- With Mohs hardness of 5 to 5.5, obsidian can be worked with hardened steel files.

Cutting Stones

- Often better to break or cleave, rather than saw.
- Gentle tapping.
- Pressure knapping.
- Avoiding impact knapping or smashing.
- Squeezing in a vise.
- Dress knife edges by directly tapping with a hammer.
- Nibbler tool, pliers, and vise grips for breaking edges.

Summary

- Be gentle.
- Cushion fragile stones with lots of small stones and/or media, or thickened liquid.
- Avoid tumbling harder stones with obsidian.
- Don't reuse soft media in a finer grit tumble.

Dremel Drill Press Cutting

Drill Press Cutting and Grinding