

Rock Tumbling how-to

Where to Begin:

First, choose rocks that are a good size for your tumbler. Generally, an inch or so across is a good size. Avoid large stones in a small tumbler, and try to have a good mix of sizes. Beach rocks make great tumbled stones. Add rocks to the barrel so that it is 2/3 to 3/4 full. Too full and you won't get a good tumbling action. Not enough and the rocks will just slide down the sides. Next fill it with water so it comes up to the bottom of the top layer of rocks. The peaks of rocks should not be submerged. Add 1 heaping tablespoon of rough grit per pound of rocks. (3 for a three pound tumbler, etc) If you wish, you can add 1 Tbsp of borax or soap to the mixture. It is also wise to add a tsp of baking soda or a tums tablet to cut down on gas buildup. Wipe off the lip of the tumbler and rubber lid so they are free of grit. Seat the lid into the tumbler, put on the outer lid, push it down so it's snug, then tighten with the washer and knurled nut. It does not need to be tight. Finger tight and just a little snug is all that is necessary. Over tightening the nut could cause the lid to leak.

Rough Stage:

Wipe off the barrel and get it going on the tumbler. If you are starting a new batch it is wise to oil the bushings with a drop of oil. If the barrel slips, clean off the shafts or lightly sand the outside of the barrel and shafts to roughen them up. Now you're rolling! It's a good idea to keep an eye on the tumbler for the first few hours. Especially during the rough stage, gas can build up in the tumbler, causing it to bulge. This can be fixed by taking off the outer lid and burping the tumbler. Gas tends to only build up during the first 8 hours of tumbling. Once things calm down, you don't have to worry about gas buildup. Let the tumbler run for 7 to 14 days depending on the type of stone you are tumbling. The more they tumbler the rounder they will get. Most jaspers and cherts and beach rocks are good with 7 days. Harder agates should be run for longer. Check on the tumbler every 3 days or so. The secret to tumbling is a good slurry. You want a soupy consistency for optimal tumbling action. It will look like a thin grey milkshake. If it gets foamy then ever better. Make sure to wipe off the seal and lid before resealing the tumbler each time you open it to avoid leaks.

Medium Stage:

Pour out the rocks and slurry over a strainer. **DO NOT POUR SLURRY DOWN THE SINK!** It will harden on the inside of your pipes like cement and ruin your plumbing! Do it outside! Rinse off the rocks with a hose until all the grit is cleaned off. Inspect them checking for cracks and pits. Break up any cracked rocks. Cracked and pitted rocks can be set aside for the next batch or you can rerun the rough grind until the batch is to your liking. Clean the inside of the barrel and lid thoroughly with water. Now add water up to the top layer of the rocks so they are just sticking out. Add 1 heaping Tbsp of medium grit per pound of rocks and 1 Tbsp of borax or soap. Seal up the tumbler as before and let er roll! Run the medium stage for 7 days.

Fine Stage:

Thoroughly rinse the rocks again after 7 days and inspect them. Again, **DO NOT POUR IT DOWN THE SINK! NEVER POUR SLURRY DOWN THE SINK!** At this point, the level of the rocks will have gone down a bit. The rocks should have a satin sheen to them. Add water up to the top layer of rocks and 1 heaping Tbsp of fine grit per pound of rocks. If the level of rocks has gone down significantly, add plastic pellets to make up the difference. These act as padding and ensure optimal tumbling action. Add some soap flakes (ivory is nice and gentle), seal the tumbler as before making sure the nut is snug and return it to the tumbler base for 7 more days of tumbling.

Polish stage:

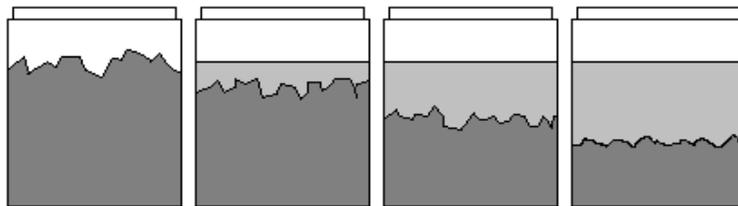
At this point, cleaning becomes very important. Thoroughly rinse the rocks and check for stray grit. Any pellets can be saved and reused. They float making them easy to skim off and save. Make sure you don't have any pellets from the prepolish going into the polish. Add water up to the top layer of the rocks so the tops are peeking out like before. Add new pellets to the barrel to bring up the level to $\frac{2}{3}$ to $\frac{3}{4}$ full, Remember to add water as needed, but not so much that the pellets begin to float. Add 1 heaping Tbsp polish compound per 3 pounds of rocks. You don't need much. Add some soap flakes. Seal the barrel like before and return it to the tumbler base for 7 to 10 days. Remember not to mix pellets of different grit stages and to store them separately.

Burnish Stage:

Rinse the rocks. They should have a nice shine now. Once rinsed thoroughly, return them to the barrel with the same pellets you used for the polish stage. Add some soap flakes, seal the barrel and run them for 1 day. This serves to clean the polishing compound from the rocks and get them to really shine. Rinse them off saving the pellets for the next polish stage and you're done! Congratulations!

Tips:

- Don't mix rocks of different hardness in the same batch. Avoid mixing quartz and agate.
- Make sure rocks are of somewhat uniform size and add some rock chips to help circulate grit.
- Make sure to thoroughly clean the rocks and barrel after each stage. Do not use harsh soap or cleanser on the barrel.
- Add water just up to bottom level of the top layer of rocks. The goal is to get a thick slurry going. If you need to thicken your slurry, add sugar.
- Use plastic pellets to keep the barrel level $\frac{2}{3}$ to $\frac{3}{4}$ full always. Also use them to cushion sensitive stones. **DO NOT** mix pellets from one grit stage with another!!!



Rough

Medium

Fine

Polish

Diagram showing amount of pellets used to keep barrel full. This optimizes the tumbling action. Dark grey is the rocks, light grey is the pellets. When adding water with pellets, add enough to saturate pellets but not so much they begin to float. Usually, when adding pellets, start by filling the barrel until the water is just at the top layer of the rocks. Then add pellets and shake the barrel around until they settle. Most of the time you will not need to add any more water, as the pellets will displace the water and bring up the level.

- Keep tumbler on a solid level surface with sufficient ventilation. Do not put tumbler in an enclosed space. The garage or Laundry room works fine. Keep objects away from your tumbler. It will get warm, so keep flammables away from it.
- Avoid the urge to check on the tumbler every day. Check on the rocks every three days or so to see how they are coming along. You can usually tell what is going on in the tumbler by listening to it (except during the polish stage). The name of the game is patience.
- Do not use more grit than necessary! Using more grit does not necessarily mean your rocks will tumble faster.
- Polishing compounds can be reused. Pour off final polish slurry and let evaporate. Break it up for use in the next batch.
- Polishing compound will permanently stain your clothes! It does not come out!
- When breaking up rocks for tumbling, WEAR GLOVES AND GOGGLES! Also, break up rocks under a towel so chips don't go flying.
- Do not pour used slurry down the drain! It will harden like cement and can clog your pipes. Also, if you use borax, do not pour over plants. It is toxic to plants. A non toxic alternative to borax is "Deft" laundry detergent.

Things to watch out for:

- Edges of stones don't polish but faces do. Make sure to use rocks of a similar hardness. This can happen when mixing quartz in with agate. Also, you may need more cushioning. Add pellets as necessary and sugar to thicken your slurry.
- I did everything right but I just got a so-so polish. Hazy polish can be caused by grit contamination. Make sure to thoroughly wash rocks and barrel each grit stage. If your stones have pits, grit can get trapped. Remove rocks with pits or clean them out well. Also consider running a prepolish stage. This is helpful on softer stones which are harder to polish.
- The barrel slips! A slipping barrel is caused by oil and grime on the rollers or barrel. Lightly sand the outside of the barrel and shafts with 100 grit sandpaper.
- Barrel bulges and looks ready to explode! Gas buildup in the barrel is common and usually happens during the first few days of the rough grind. Add a teaspoon or two of baking soda in the barrel when you load it to prevent gas buildup. It is a good idea to keep an eye on your tumbler for the first 4 hours and burp it as needed. Gas is caused by reacting organic compounds on the rocks.
- Barrel leaks or lid came off. A leaky tumbler means you didn't seal it up all the way. Clean the lid and barrel edges with a sponge before putting on the lid. A little water helps too. If the tumbler lid came completely off, it means that you probably over tightened the knurled nut. It should be hand tight, just a little snug.

-How big of a rock can I tumble? You are limited by the size of the barrel. In smaller tumblers, keep the rock smaller than a golf ball or about walnut sized, and only do one or two large ones in with the regular ones. If you are going to add a few large rock s in your batch, be sure to add some rock chips to promote grit contact.



Grit Chart

Stage	Additives	Grit Amount	# Days	Basic	Extended	Exhaustive
Rough	60/90 grit, Baking Soda, Borax, Sugar*	1 Tbsp per lb. (low heap). 1c for 10-12lbs	Varies	X	X	X
First Rinse	Borax or Soap only		1 afternoon to 1 day			X
Meduim	120/240 grit, Borax, Sugar*	1 Tbsp per lb. (low heap). 1c for 10-12lbs	7 Days	X	X	X
Second Rinse	Borax or Soap only		1 afternoon to 1 day			X
Fine	600 grit, Borax, pellets, Sugar*	1 Tbsp per lb. (low heap). 1c for 10-12lbs	7 Days	X	X	X
Third Rinse	Borax or Soap only		1 afternoon to 1 day			X
Prepolish	1000 grit or Tripoli, pellets	1 Tbsp per lb. (low heap). 1c for 10-12lbs	7 to 10 Days		X	X
Final Rinse	Borax or Soap only		1 afternoon to 1 day			X
Polish	Cerium Oxide, Alumina, Tin Oxide (use less), CCP, etc	1 Tbsp for 3 lbs load, 1/3-1/2c for 10-12lbs	7 to 10 Days	X	X	X
Burnish	Walnut shells or pellets and soap only		1 Day	X	X	X

Moh's Scale	
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Jasper (~6.5), Feldspar
7	Quartz, Agate
8	Topaz
9	Corumdum
10	Diamond

*optional. Used to thicken slurry.