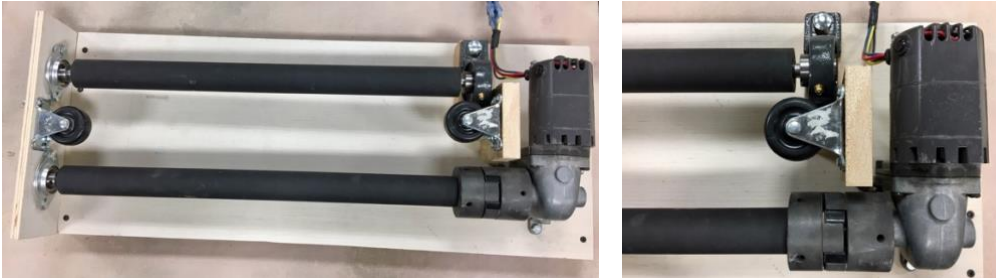


Do-It-Yourself Ball Mill

Jeff Schmuki with thanks to Marty Huehner

In my hydroponic gardens, I use a ball mill to recycle discarded ceramic bisque to prove a growth medium. Industry commonly uses ball mills to pulverize clay and glaze materials into smaller particles ensuring easier application and viscosity as well as a fired finish free of defects such as pinholes, blisters, and specks. Below is how to construct a DIY ball mill, perfect for studio use and from easily found parts.



DIY Ball Mill Materials



(2) Rubber Rollers: Easily found on ebay, look for rollers without any bearings that have a fixed shaft. The size diameter of the shaft will determine the pillow block bearings below.



(4) Pillow Block Bearings that match the roller shaft measurement. All four can be top mount or (2) can be flange mount as in the second image. Farm supply or eBay is a good source.



(1) gearmotor, 115 VAC with rpms ranging from 90-130. Pictured is a right angle gearmotor that saves space. I get my gearmotors on Ebay and purchase those with an electrical cord and switch so it is ready to go. You must know size of shaft for the below jaw couplers so I always ask before purchase.



(1) 3 piece Jaw Coupling as pictured above. This coupling connects the motor shaft to one roller. The motor shaft and roller shaft can be different sizes, just make certain the two couplings mesh together and come with the rubber spacer. I can get couplings of all sizes at Surplus Center:

<https://www.surpluscenter.com>



(1) solid steel coupling might be needed to connect the roller to the motor shaft if the bearing takes up too much space and there is not enough shaft. If this is the case, cut the head off a 4-5 inch lag bolt the same diameter of the roller shaft and use the above connector in a corresponding diameter. I get these at Surplus Center as well.



Scrap Lumber. A selection of scrap wood is a must to provide a frame for all the parts above. Get a screw gun, screws and bolts the size noted for mounting the bearings.



Ball mill jars. These ceramic jars are hardened zirconia ceramics made to withstand the grinding process. If grinding softer materials, you can make jars out of PVC however I am uncertain of their durability. There are a good number of YouTube videos on making these PVC containers.



Ball mill media. Needed If grinding harder materials or glazes. Various sizes are best. Fill jars 1/3 full of media, 1/3 of material being ground, and leave 1/3 empty. Can add water or leave dry for glazes. Do not grind glazes for more than 24 hours unless crawling glazes are desired.

Congrats! You just made a ball mill and saved \$\$\$ doing it yourself!