



Technique...

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Making Rough Powder



Figure 1: A plastic mixing bucket full of meal powder with 5% dextrin added.



Figure 2: 14% water by weight is incorporated into the powder and formed into big chunks.

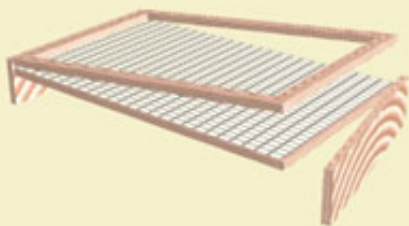


Figure 3: Screen frame assembly.

Introduction:

Rough powder, also called pulverone, is a granular mixture made from black powder that is used as a structural filler in Italian canister shells. It is also used extensively by the Maltese in both lifting and breaking their shells.

Rough powder provides a non-compressible filler in the form of large granules that allow hot gases to pass through it without creating a fire block. It has the advantage of burning away after it serves its purpose, which is to insure that the shell makes it out of the mortar without rupturing under the lift forces. It also helps to keep shell components in place when used as a filler between gaps or as a hard bedding between different effects layers.

Wetting the Meal:

Rough Powder is usually made from the standard 75-15-10 black powder mixture with an additional 5% dextrin added to make the grains harder. If the rough powder is to be used only as a structural filler, then it need not be made from ball milled powder. Simple green mix will work fine, since the purpose of the powder will be to fill voids rather than contributing to the break charge.

If the rough powder is to be used for building Maltese shells, then a fast burning ball milled meal should be used. The rough powder will be responsible for both lifting and breaking the shell, thus a slower burning green mix will not work well.

Prepare a plastic mixing container full of meal as shown in Figure 1. An amount of water equal to about 14% of the weight of the meal is added and mixed in by hand. Using alcohol mixed with the water is not desirable in this case, even though it makes the job of mixing in the water easier. The powder will develop more lumps if mixed without alcohol, and these lumps help create better rough powder with less fines (small particle dust) created during screening.

To help distribute the water through the meal, it helps to pound all the dampened powder into one large slab after the water has been worked into the mix for several minutes. The star cutting rammer shown [here](#) works good for pounding the damp meal into a slab.

The slab is allowed to sit for a few minutes, then it is broken into chunks as shown in Figure 2. If the chunks seem too crumbly when broken apart, then more water needs to be added. If the slab develops a shiny wet surface when pounded out, then the composition is too wet.

Screening the Chunks:

A table is prepared with a covering of newspaper on which the rough powder



Figure 4: Chunks are pushed through screen, not grated like cheese.



Figure 5: Moving the screen sideways as the chunks are screened results in a thin layer that dries faster.

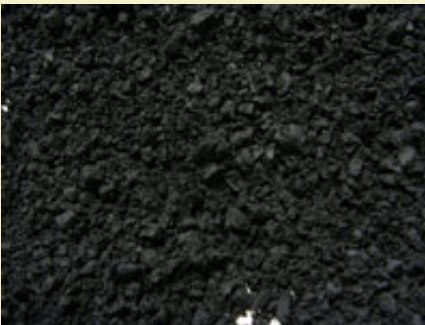


Figure 6: Closeup shows the large variety of particle sizes in the screened powder.

will be screened onto. This paper helps the powder dry, and makes cleanup easier as well.

You will need to make a screen from the galvanized hardware cloth sold in most hardware stores. The most common size to use is 1/4" screen, although some builders screen through a 1/2" screen first and then, after the grains dry a little, push them through a 1/4" screen a little while later. This double screening helps reduce the amount of fines. Regardless of your technique, you will probably want 1/8", 1/4" and 1/2" screens for sizing purposes.

The screens can be made by sandwiching the screen between two wooden frames, as seen in Figure 3. The opposing pieces are held together using wood screws, with overlapping joints at the corners. A piece of 1x4 is screwed onto each end of the frame to hold it up off the table. This design, as opposed to a closed box design, allows you to screen long strips of powder without the screen box getting in the way.

Figure 4 shows the chunks being pushed through the screen. Avoid the tendency to drag the chunks across the screen, which acts like a cheese grater. This will create flat ribbons of powder instead of the gravel like chunks that are desired. If the powder is properly dampened, the chunks should break apart into small pieces as you push them through the screen. If they extrude into square pieces, then the powder is definitely too wet. If they crumble into dust with little effort, then the powder is too dry.

Screen only enough to cover the paper, then shift the screen over and continue covering the newspaper. Figure 5 shows a strip of completed rough powder left to dry. This can be moved onto a new sheet of paper or onto paper lined drying screens after 24 hours of drying. Trying to move it while wet can cause unwanted clumping.

Figure 6 shows the variety of grain sizes in the finished product. If this powder is to be used for constructing Maltese shells, you will need to run the dry powder through a 1/8" screen to separate lift powder from break powder. Everything that passes the 1/8" screen is lift charge, while everything that sits on the screen is break charge. 🔥

