Method number one: Green mix

Chemicals: By weight (use a GOOD scale) 15 KNO3, 3 charcoal, 2 sulfur.

Initial Prep: Separately, grind the chemicals down to at least a sugar consistency, or finer. The charcoal is hard to take from the big lumps down to a workable powder. The best way I found was to put some lumps in a heavy paper bag, and beat on them with a hammer, outside.

Procedure: My first attempt used low-grade chemicals from Home Depot, and consisted simply of combining the chemicals in a bowl, and adding enough hot water to form a dough/paste. I like mine on the thicker side, like bread dough. A thinner, runnier mix will actually work better, but is harder to mash or grind.

Use hot tap water. KNO3 is MUCH more soluble in hot water than cold, and the idea is to dissolve as much of the KNO3 as possible. That allows it to migrate nicely into the pores of the charcoal, making the wet method better than a dry mix, by far.

The chemicals are manipulated until the mix is uniform. There should be no chunks of KNO3 or sulfur. You cannot hand-grind too much. The more you work it, the better. When you feel you are done, squeeze the mash into a ball, rub the ball through a section of aluminum window screen into a pan or a piece of paper, and allow to dry.

Results: This is emergency powder, made from home depot materals. Remarkeably, it worked pretty darned well, better than my previous attempts at a green mix. A pile perhaps 1/2 inch tall burned sharply, WHOOSH, in about 1/5th of a second. In a firearm, it would definitely do the job we need.

Conclusion: Low-grade moist green mix works, but it is horribly labor intensive, and useful only when there is no other alternative.

I decided to do a 200 gram batch for my first, using the standard 75:15:10 KNO3, C, S.

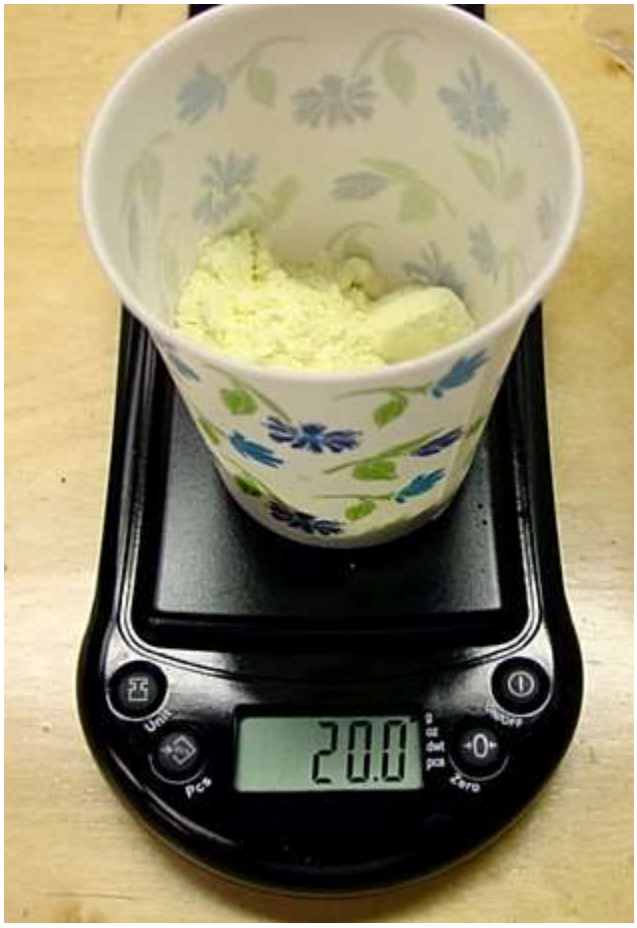
This little scale I got off eBay and is the best 0.1g capable scale I have except for a reloading scale. I think these are marketed to drug dealers based upon the description off of eBay. Anyway, good electronic balances have gotten really cheap. I think a good basic pyro balance needs tenths of a gram, and a high end of a kilo or more is nice too.

For this batch, I am going with the primo ingredients. First the KNO3...

I am using muffin papers or disposable dixie cups as receptacles. Since this little scale doesn't go past 120g, I need to do two weighings, to get 150g of KNO3.

Into the ball mill drum, right on top of the brass media...

This drum is from one of the really cheapo rock tumblers that Harbor Freight sells. I foolishly bought one. The quality is very low. I think if one wants to be serious with this stuff, a much heavier duty ball mill is needed. There's a guy on eBay who sells nice ones. Something like this would be very easy to make, but I have elected to go with the commercial unit to save a bit of time.



On to the sulfur, 20 grams, which is 10% of 200 grams...

Finally, the charcoal. I have read on various other forums that this charcoal, sold by Skylighter is not the best quality charcoal, but it'll be good enough until I get my willow charcoal. One possibility I'd heard about for what is supposed to be the all-time fastest BP is balsa-wood charcoal. I'll need to try that one of these days!

I added 3% dextrin, 6 grams, to the mix. It'll get dispersed right in with the rest of the ingredients, and when the time comes to moisten, it'll activate and be a nice binder.

Mill it wet, or dry? Odd, I've found many different opinions. A lot of people do it dry, without the

slightest problem, and I decided to go dry. My reasoning, if the mix is moistened, it is going to clump badly and glue itself to the media, the walls of the jar, and I'll have a bad time separating it. Dry, I'll go through a strainer, right into a clean bucket, moisten and stir, and be ready to screen it.

Here is my bunker. Mosy guys use sand bags or pits. For a 200 gram sample, this will suffice. It is behind my shop, with nothing nearby except woods and the metal shop wall. I used an old steel I-beam as a backstop, then stacked bricks to absorb any blast. It is turned on and off remotely.

One thing even the good tumblers lack is a bearing for the jar. As these things turn, the jar migrates to one end or the other, and without this little widget I made, would scrape itself to ribbons in short order on the body of the ball mill. I can reposition the bearing to handle any size of jar.

The bunker is sealed, and milling is underway! I am almost half-anticipating a BOOO-OOOOM, but the more I research this stuff, the more confident i am. Even dry, so long as you use a non-sparking setup, I think it's pretty safe.

Here's what I saw when I lited the lid after 4 hours of balll-milling:

Looks good - completely mixed and in a grain size like corn starch.

I made a mistake when I tried to use this strainer to separate the media from the powder. The powder would NOT flow through those small holes without a lot of agitation, and the fine powder was going all over the place. I ended up picking out the brass pieces by hand.

I prepared a cup of 1/2 water and 1/2 alcohol to make a BP dough. Wearing vinyl gloves, I added the liquid to the BP, stirring, and just like flour would, it formed a dough ball.

The good part is, it is tacky, so it automatically gathers itself up with a bit of manipulation. All that was left in the bucket was a few particles.

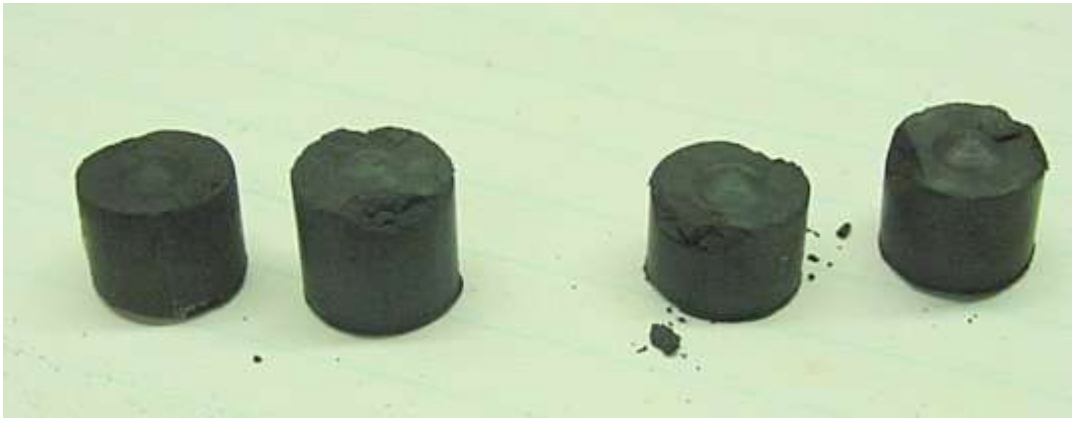
I did add dextrin to this. Dextrin is a form of glue or binder, and that certainly helps. If allowed to dry in this shape, it'd harden up and be a real pain to work with later, so right away I went for the screen. This is a piece of aluminum window screen I glued into a frame that was specifically sized to fit over this teflon paint pan. The paint pan is ideal. Nothing sticks to the teflon... it is cheap, and also forms a perfect tray to dry the BP in.

While the BP dough is soft, it screens really easily. The whole ball went through the screen in about 2 minutes. It formed some nice grains. This time, I decided to not touch the powder in the paint pan until most of the drying is done. I think this helps maintain the grains in their current size and shape, and not collapse into dust or smaller pieces.

A small sample of the end result...

Nice grains, a bit fine, but no problems. The big question, how does it burn? Initial tests show an excellent powder that I think is just one step away from commercial. It is really good powder that would perform perfectly in any smokepole.

I decided to press a few nuggets in a hydraulic press.



Pressing and then rescreening is supposed to produce even better BP. A simple side by side comparison between this powder, and the stuff from the previous alcohol batch, this stuff is MUCH faster! Hurrah!

The next step will be willow charcoal, and after a bit more research, a very small batch made with Potassium perchlorate, which is even zippier, unless someone can talk me out of it.

Oh yes, 200 grams was more than enough for a first milling! The jars that came with the ball mill are HUGE. I'm guessing they could produce 4 or 5 lb of primo BP at a time.

Summary - if you want really easy, excellent BP, buy or make a ball mill. It couldn't be easier. You toss the ingredients in the jar, turn it on, and it makes BP, simple as that.