

We Built a Clay Oven! (And So Can You!)

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If you don't want your food or yourself covered in some degree of ash, this is not the cooking method for you

Building materials:

- Cinder blocks
- Sand
- 2x4s
- *Fire brick*
- Reeds/vines (for building your basket)
- Clay (from your soil or store-bought)
- Straw
- Water
- Tarp, bucket, shower curtain -for mixing mud

Cooking/Fire Management Equipment:

- Fire extinguisher! (you probably won't need it, but just in case...)
- Blowpipe or bellows
- Welding gloves
- Fire-proof tables
- A few buckets of water (at least one big enough to hold your door)
- Metal pizza peel
- Non-contact thermometer

Pennsic List:

- Talk to 3-Bears (N-17), they build a clay oven at War every year. They will probably have some great tips!
- Take a basket-weaving class
- Take Master Nigel's Fire-Starting class (and/or pick up a fire-starting kit)

Building Your Oven:

1. **Take measurements, pattern, and figure out your dimensions:**

Measure the largest pot that you plan on using in your oven. This is going to be the size of your



door. Don't make your opening smaller than your pot; you will be sorry.

To get the dimensions for your oven, trace the shape of your pot onto a piece of cardboard. Now, draw a nice arch over/around the pot, leaving enough room for your hands on either side. Cut this shape out and measure it (but keep the rest of the cardboard).

Measure the height of the arch you cut out. This should be $\sim \frac{2}{3}$ of the total height of your oven. $\frac{2}{3}$ is the magical ratio that you need to get proper air-flow for an oven without a chimney. You can build a chimney if you want to, but I've never done it and don't know anything about it, so you're on your own.

Once you have the total height of your oven, use that number as the radius for the base. If you want your oven to be bigger or smaller, you can tweak the numbers a bit. It's a good idea to draw out the full base of your oven on another piece of cardboard to see if it looks big enough for you. Sit out a few pots and pans that you plan to cook in and see if they all fit. This may sound silly, but it's important. You don't want to put all that work into building an oven you're not going to be able to fit any of your pans into.

Speaking of, take that piece of cardboard you cut earlier, the one I told you to keep. Take your biggest pot and make sure it actually fits through the arch you cut out. Does it fit? Good, you have the dimensions for your oven and you can start building it.

2. Build the platform:

I can't tell you exactly how to make the platform that will support your oven, because I don't know what kind of materials you have to work with, how tall/wide you want it, what the space you're going to build it in looks like, or what your budget is. I can only tell you what we did, and what I might do differently if I had to do it all over again.

I don't remember exactly how we came up with the height for our platform. But I know that we consulted my mother-in-law (the person we were building this oven for) and came up with a height that would be comfortable for her to work at. I suggest you don't build your platform too low, or you will be bending over a lot and may make your back sad.

Since we knew how big the base of the oven was going to be (we had a cardboard cutout to work from), we knew how wide we needed the platform to be. We used a combination of materials including cinder block, sand, pavers and fire-brick to build it.

We started with 3 layers of cinder block to just build up the basic shape of the platform and to get the oven to a good height for us. We didn't stuff or insulate the cinder-block with anything, and this is something I would change. I would add some type of insulation (sand, newspaper,

empty wine bottles) to fill up the empty spaces in the cinder-block, but it's not critical if that sounds like too much work to bother with.

We then built a wooden box (really just four 2 xs butt-jointed together) to hold sand. We also added some busted up pavers that a friend was getting rid of for some added insulation. We filled every remaining space with sand, and leveled it off as best we could to have a nice clean surface to build our oven on.

The next step was to pick up some fire-brick. This was probably the single most expensive part of building the oven, but it's necessary. First of all, you don't want your food (even if it's in pans) sitting on the sand. You need some flat, solid surface to put your pans on. The inside of our oven gets to over 1,000 degrees F, so normal bricks are *not* going to cut it.

A note, I know that fire-brick isn't period. But it's safe, so it's what we used. If you want to do your own research and find something that would be more period, that's fine. I'm going to continue recommending fire-brick, because I know that it'll work and that it won't explode. Shop around, you might be able to find it cheaper than we did, we got it at Home Depot (currently \$29.99/6 pieces, we used about 10?)

3. Make the basket:

We wove a basket to make the dome of our oven. I know that there are other methods that work for this, like making a dome out of sand and then scooping it out, but I don't know much about those methods, so we're gonna stick with the basket.

We used grape vines that we had sitting around, because we have a lot of wild and not so wild grapes in our area. You can use reeds or pretty much anything else that will burn up nicely. I would recommend taking a basket making class here at Pennsic. It's a good skill to have and this is a good first project to make. Especially since it doesn't have to look good, it just has to have a tight enough weave to support a thick layer of mud on top. And if the weave doesn't come out all that tight, paper mache can fill in the gaps.

The method that we used to make our basket was to take the piece of cardboard you traced the base of the oven onto and punch holes along it every 4" or so. Then you take the long pieces of grape vine (or reed) and make an arch that reaches the total height of your oven, don't worry about the door right now, and tie them together. Once you have that frame you can simply weave



in more vines or reeds to fill up the rest of the space.

4. Build the door:

Okay, *now* it's time to make the door. Take that cut-out of the arch I told you to save and use that as a pattern for your door. Remember, the door should be $\frac{2}{3}$ of the total height of the oven to insure proper air-flow. A good material to make the door out of is hardwood. Our door is made out of three layers of hardwood. A thick core, and two thinner layers screwed into it on either side. A large, sturdy **wooden** handle will make it easier to open and close your oven.

A note about doors. Doors are disposable. You're closing up a space that is going to be 1,000 degrees and have a live fire in it. Whatever door you put on is going to catch on fire and char. We negate this a bit by keeping our door soaking in water when we're not using it, but we also understand that we will need to periodically replace the innermost layer (if not the whole thing)

5. Mud, glorious mud:

The first step here is to acquire clay. We got ours straight out of the ground. We live in Michigan, and we have a *lot* of clay in our soil. If you live in a region that has soil better suited to gardening than clay-oven building, I'm kind of jealous, but also you'll need to augment your soil with store-bought clay. I recommend checking at specialty stores, or buying online. The going price seems to be ~ \$1/\$1.50 per pound.

A quick note: I would not recommend craft stores, as they are likely to only carry small amounts of clay, and to charge a lot for it

Next you'll want to turn your soil/clay combo into cob. This is done by adding straw. The ratios of straw to soil are going to vary, but a good rule of thumb is: the more clay you have in your mix, the more straw you'll have to add. Straw is at least easy to find. Ours was gifted from a friend, but you can get bales of straw at most garden centers or feed stores.

6. Mudding the oven:



Get your frame ready:

Take the dome you that made and place it on your platform where you want it to go. Once you start putting mud on it, you won't be able to move it, so make sure it's in a good spot. Next,

take the door and put it... where you want the opening to be (we suggest in the front). You're going to mud your oven with the door in place, but you'll notice that there's a gap between the dome and the door

You can't put mud in a gap, (otherwise you won't be able to fit your pots through the opening) so take a piece of cardboard and cover up that gap, matching the arch of the door and meeting up with the basket/dome. This will be the frame for your opening, and should burn out nicely when you fire your oven.

It also gives you some space between your wooden door and the mud (which will shrink a bit as it dries). This will allow you to more easily take the door out when it's time to fire.

Sling your mud:

Do one layer at a time, if possible let it dry out between layers. We found it easiest to make "snakes" and layer them on the frame before smoothing them out. Your first layer should be between 3"-6" thick. It doesn't have to be exact, and if some layers are too thin (as our first layer was) you can just put more layers on top. This is not an exact science.

If possible, let each layer dry out for 2-12 hours before placing a new layer on top of it. We didn't do this, and our oven turned out fine, but it *is* recommended.

Our first iteration had "thin" spots as thin as 4". We added mud and built it up over the years, but it would have been better if we had built it a bit thicker from the start, and been more careful to have it a consistent thickness. We recommend building it with *at least* 6" of mud. Remember that the thicker your oven is, the longer it will take to heat up, but the more cooking time you will have.

Once you're done slinging mud, let it dry for a couple of days.

If you don't have time to air-dry it for several days here's what to do. When you fire it, try to do so slowly, and at a low heat. A warning: If the outside is dry and the inside is terracotta, the water between them will boil. If you're lucky, it'll crack. If you're not... it could explode. You want everything dry out at the same time so that there's no water trapped in the middle

7. Fire:

Okay, once your oven has had a chance to air dry for a few days (or not, see above), it's time to fire it.

Start a fire; keep it small and low. Keep in mind that you already have kindling in your oven (the basket and cardboard), so don't add too much all at once. You want to keep a slow-burning fire, and let the oven bake as sloooowly as possible. When the outside of the oven is too hot to

touch, then you're done. The whole process should take several hours. This is a great time to bust out your non-contact thermometer to see what temperatures you're getting in your oven.

Congrats! You've built a clay oven and it's now ready to use!

You can cook the same day you fire it, though you might need to build the fire up again once the oven is completely dry. This is a lot of work, and might be a logistics/timing challenge, but let us know how it works out for you!

