

SMALL BATCH--CHARCOAL MAKING
NEWTON'S METHOD

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PRELIMINARY COMMENTS:

Anyone who can read should be able to make charcoal, NEWTON'S METHOD, by following the instructions on the attached sheets.

You should be aware of some basic information so as not to hurt yourself or waste time and effort:

CAUTION--Indoor usage of charcoal or making charcoal should never be attempted unless the area has good air circulation. The carbon monoxide gas generated when making charcoal and in cooking or heating with it can be lethal.

Heavy gloves should be worn so as not to get burned.

It is essential to have thoroughly seasoned wood or kiln dried wood as raw material. This wood may be scrap mill ends from furniture factories or demension mills. It could be from saw mills provided the wood is not wet or green. It must be dry seasoned wood or else you cannot make charcoal because green or wet wood takes too much heat for this small batch method. The wood could be DRY small diameter tree limbs cut to the desired length to fit into your cooker (kiln). It is preferable from my view point to have pieces of wood in small segments (3" cubes would be the ideal size), however, it may be 2 or 3 inch diameter material cut into any length you desire as long as it fits into the cooker.

Charcoal may be made from Softwoods as well as Hardwoods, however the two types of wood should not be mixed together in the same batch as the lighter softwoods will burn up before the hardwoods change into charcoal. Softwood charcoal is lighter in weight for the same bulk than hardwood charcoal.

Rotten wood should be avoided as it does not produce good charcoal. Branch wood that is excessively crooked and wood with a high percentage of bark does not produce good charcoal. Therefore, if using branch wood select only straight debarked pieces.

All you need to make good charcoal is a supply of seasoned, dry wood as previously described, a proper work site, a few tools and some easily obtainable inexpensive items from which to make a cooker (kiln) as per the following instructions and drawings:

TOOLS, EQUIPMENT AND SUPPLIES:

TOOLS--

Shovel, rake, old broom, short handle scoop shovel or grain scoop (to scoop up charcoal product), a short $\frac{1}{4}$ " diameter steel rod poker and (1) 36" piece of 2" pipe (or substitute straight 2" diameter tree limb).

EQUIPMENT--

- 1--Steel 55 gallon drum with cover
- 1--4" x 5' piece of stovepipe or other metal tubing
- 1--4" 45° pipe elbow to fit above pipe
- 2--4" clamp fasteners (optional) to clamp around and used to hold pipe in desired position when wired to drum.
- Length of strong flexible wire to fasten pipe to drum
- 3--pieces of 3/8" x 1" x 2" scrap bar stock or any small pieces of 3/8" scrap as substitute.

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EQUIPMENT--(Cont.)

1--piece of scrap steel plate 1/16" x 6" x 6" (lid for 4" hole in cover)
1--piece of scrap steel plate 1/16" x 6" x 6" bent to fit curvature of steel drum. (to cover up and seal the 4" hole left when smoke stack is removed after the cooking is done)
Brick or Firebrick (optional) to cover ground and be the base for the cooker (kiln) to sit upon. Clay or dirt base may be used, however it is easier to form and keep intact the lighting channel using bricks rather than dirt.

SUPPLIES:

Kerosene (igniting fuel)
Matches
Bag(s) for charcoal
Gloves
Sand or dirt (to seal off cooker air-tight after the charcoal is done.)
Kindling wood starter fuel or partially charred wood and charcoal scraps from previous batches.
Small can (from which to pour kerosene)
Newspaper (to make lighting torch)

PREPARE THE WORK SITE:

Pick a high level area so that rain water will run off and not drain into your work site. Smooth the surface level with a rake. You may use dirt or clay as the base on which to rest your cooker, however, if you have access to some used firebrick it will be a much better base.

One of the key factors in making a successful good batch of charcoal is based on the method used to start your fire when first lighting the fuel in your kiln. After much experimentation, I have found it advisable to light the kiln from the bottom through a channel formed when first laying the firebrick down as the base for the cooker. The 55 gallon drum which will become the cooker is approximately 2 feet in diameter. When constructing your firebrick base use enough brick to completely cover the ground under the cooker with enough extra so as to extend outward on all sides approximately 5 or 6 inches beyond the circular drum cooker as it rests on the firebrick.

Normally you will lay the brick with the 9" x 4" surface face down. You may construct the lighting channel as previously mentioned while constructing the base by laying two or three bricks with the long 9" narrow edge down. These narrow bricks should be laid starting in the middle of your brick base and extend outward in a straight line to its perimeter. Once the base has been formed to your satisfaction, you simply pick out and remove the brick laid on its narrow edge, thereby forming the channel that you must have. When the brick is all in place, take sand or loose dirt and fill all of the spaces between bricks (the purpose is to keep air from seeping through these openings and into the cooker). Sand swept over the surface of the bricks usually does a good job of filling these spaces.

You may not have access to brick or firebrick. If you do not, you may construct the lighting channel by simply digging a small fist size trench underneath the rim of the cooker as it sits on a dirt or clay base. It is essential that this trench or lighting channel extend from just outside of the cooker under the rim in a

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PREPARE THE WORK SITE: (Cont.)

straight line into the center of the base which will also be the center point within the cooker. Refer to drawing, note channel in brick base.

CONSTRUCTION OF COOKER (KILN):

Refer to the illustrative drawing on the last sheet.

PART 1 (COVER)

Take the 55 gallon drum as listed under equipment. Remove the cover and cut or burn a 4" diameter hole in its center. Next trim approximately 1" of metal off the outside edge of the cover, all around its circumference, preferably with a torch.

PART 2 COOKER (MAIN BODY)

With the drum in an upright position measure about 3/4" down from the top of the drum or just under the rim of the drum. Mark a 4" diameter circle from this starting point. (This will be the smoke exit point for the cooker into which the 4" pipe elbow (Part 4) will be inserted at the proper time.) Follow the chalk line and cut a 4" hole near the top of the drum as indicated.

Next turn the drum bottom side up. (This bottom side up position will from now on be the top side of the finished cooker.) Measure and mark a chalk line circle approximately 2" in from the outside edge of the drum all around the circumference of the drum bottom. With a torch cut most of the bottom end out of the drum as marked by the chalk line just drawn.

PART 3 (SMOKE STACK)

From the equipment select the 4" x 5' section of pipe which will become the smoke stack. At this time you may want to attach support wires to the pipe which will be used to secure the stack to the drum cooker while in operation (use clamp fasteners mentioned under equipment or simply wrap the wire around the pipe and secure same to the drum in whatever fashion you desire--so long as it is in an upright position).

PART 4 (45° ELBOW)

Insert the elbow into the 4" smoke stack (Part 3) and lay it to one side until needed.

PART 5 (LID)

This 6" x 6" square metal lid will be used to shut off the smoke exit 4" diameter hole in the cover (Part 1).

PART 6 (CURVED LID)

This lid similar to Part 5, but curved to fit the curvature of the drum cooker Part 2; will be used to shut off the open 4" diameter hole left after the 45° elbow Part 4 has been removed at the end of the cooking cycle.

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CONSTRUCTION OF COOKER (Cont.)

PART 7 (SHIMS)

(3) 3/8" thick shims used to elevate (Part 2 cooker) so as to create the only oxygen entry ports desired for this method of making charcoal.

FILLING AND ASSEMBLING COOKER:

STEP 1--Place starter fuel (kindling wood or scraps of partially charred wood from previous batches) in the exact center of the cleaned off firebrick base. Heap it up about 6", a couple of shovels full should do. Also put fuel in the lighting channel from the center pile outward to where the bottom rim of the cooker will rest.

STEP 2--Take the cooker body (Part 2) and center it on the firebrick base with the open end down, bottom end up. Place it so that the pile of starter fuel previously laid on the firebrick base is centered within the cooker. Also rotate the drum so that the 4" smoke hole exit will be on the opposite side of the firebrick base from the lighting channel starter opening.

STEP 3--From equipment take the 3 pieces of 3/8" shims (Part 7). Without disturbing the placement of the cooker on the base, slightly raise the drum enough to slide the shims underneath the rim of the cooker so as to hold the cooker in this raised position throughout the cooking cycle. Place the first shim under the rim beneath the smoke stack. The other two shims should be placed at points approximately equal distance from each other under the rim as support. The 3/8" opening created by these shims under the rim should be the only openings used to permit oxygen into the cooker during the normal cooking period.

STEP 4--Take your wood raw material and carefully fill the first 6" or bottom layer of the cooker so as not to disturb the starter fuel placed in the lighting channel and center of the cooker bottom. Next have a helper pick up the three foot section of 2" pipe (listed under tools) (or substitute tree limb). Place one end of the pipe down through the open top of the cooker until it rests on the pile of starter fuel in the center of the cooker bottom. The upper end of the pipe should be held steady and vertical in place by your helper while you finish filling the cooker with wood. Once the cooker is filled, the pipe or limb may be removed carefully by slowly pulling it straight up and out of the center of the filled cooker leaving a 2" hole from the top of the material down to the starter fuel.

STEP 5--Take the assembled Part 3 and Part 4 (Smoke Stack and Elbow) and wire it to the cooker after first inserting the elbow into the smoke hole exit which is at near ground level on the back side of the cooker opposite from the lighting channel.

LIGHTING THE COOKER:

From supplies take the small can and fill it with about 2 cups of kerosene. If you decide to use the 2" piece of pipe instead of the tree limb mentioned in Step 4, you may keep the pipe in place long enough to use it as a tube and carefully pour the can of kerosene so that it passes down through the pipe into the pile of starter fuel on which it rests. The pipe should then be carefully removed. If however, you use the tree limb method instead of the pipe, it is a matter of first removing the limb and then simply pouring the kerosene down through the hole left where the tree limb was pulled out. Whichever method you use, do not clog the 2" hole opening be-

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LIGHTING THE COOKER: (Cont.)

cause the hole now becomes a chimney draft hole for a short period of time and is vital to the cooking process.

Again take your small can and put about $\frac{1}{2}$ cup of kerosene in it. Take a sheet of newspaper and roll it into a short torch. Dip the torch into the kerosene. Splash the remainder of the kerosene into the lighting channel which is filled with starter fuel and should be just visible under the rim of the cooker at ground level. Next light the torch with a match and insert the torch into the lighting channel igniting the kerosene saturated fuel. The fire in the channel should quickly spread and light the pile of fuel which had previously been soaked with kerosene as stated in the preceding paragraph. Flame and smoke should quickly appear coming up and out of the 2" draft hole made when removing the pipe as explained in Step 4.

PRE-COOKING ADJUSTMENTS:

A--Take a piece of brick of the right size and place it in the lighting channel just under the rim of the cooker. This will plug the hole and bring the lighting channel area to the same level as the rest of the base. (Otherwise too much oxygen would be allowed to enter at this point.)

B--Using a shovel or grain scoop, take sand or dirt and carefully cover most of the 3/8" opening (oxygen entry point) created when shimming up the cooker as explained in Step 3. Start at the back of the cooker and close the opening under the smoke stack and completely all around both sides of the cooker, leaving only about 10" remaining open at the front or opposite side from the stack.

C--Take the Cover (Part 1) and place it on top of the Cooker (Part 2). Put sand or dirt on this cover all around the top of the cooker where the cover overlaps the seating ledge on which it rests, effectively making this covered area airtight. Smoke and flame should now be coming out of the 4" hole in the center of the cover. (At this time smoke may also start to come out of the smoke stack.)

NOTE: It is necessary to start timing your cooking period when you first lit the starter fuel with the torch. Approximately 25 minutes from the time you first lit the starter fuel, you should take the Lid (Part 5) and place it over the 4" hole in the cover from which smoke has been issuing. Next take sand or dirt and cover the lid at all points where it overlaps the cover, sealing it so that no more smoke is emitted. The volume of smoke coming out of the stack should have increased as soon as the lid was in place. THE CHARCOAL MAKING PROCESS HAS NOW BEGUN.

COMMENT: On the average it took about 5 hours to complete the cooking period in making charcoal when using 2" and 3" diameter short pieces of dry tree limbs. (I used mostly red maple hardwood.) Kiln dried wood usually burns hotter and does not normally take as long to cook, if you should use this type of wood or other species, just use my timing example that follows as your guide. After 2 or 3 batches you should be a pretty good charcoal maker.

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OXYGEN ADJUSTMENTS-TIMING:

For the first hour after lighting the cooker oxygen has been allowed to enter the cooker under the rim through a narrow 3/8" x 10" opening. The rest of the 3/8" opening under the rim all around the cooker has been sealed with sand. Using your 1/4" poker and broom gently brush away the sand for about 4" more at both ends of the existing 10" opening increasing the opening to 18". Once this is done by also using the poker to clear sand away from under the rim, close the original 10" opening with sand except for a space about 2" just over where the lighting channel brick plug was inserted. You now have a 2" opening at the point where the cooker was first lit, then about 4" of sand to the right side followed by another 4" opening. From the lighting point going to the left you also have about 4" of sand cover followed by a 4" opening.

At the end of the second hour of cooking make a similar adjustment of the oxygen input. Open 5" to the right side and 5" to the left side and then close the two 4" openings made during the first adjustment. At this time also close the 2" opening at the front starting point. (Note: In making your adjustments be careful not to dislodge your 3/8" shims which the cooker is elevated on.)

Make similar adjustments at the end of the third and fourth hours. You should not remove the sand from under the pipe stack nor for about 5" in either direction from under the pipe. (In other words the last 10" at the back side of the cooker should not be removed at all.)

After making the fourth hour adjustment, (usually about 5 hours after the cooker was first lit), the smoke will get very thin and blue looking or perhaps it will stop smoking. This means the charcoaling is done.

As soon as the cooking is done, remove the smoke stack and place the Lid (Part 6) over the smoke exit hole, lean a stick or rock against the plate to help hold it in place and then pile sand all around the plate to make the exit airtight. Seal the rest of the 3/8" openings under the rim of the cooker. KEEP YOUR CHARCOAL IN THE COOKER FOR AT LEAST 24 HOURS BEFORE YOU OPEN THE KILN.

OPENING THE KILN:

Sometime after 24 hours remove the sand from around and on top of your cooker. Take off the lid and the cover, lift up and remove the cooker main body and hopefully you will find a pile of charcoal that should more than fill a bushel basket. In all likelihood you will find some uncooked charred wood (use this as starter fuel for future batches). If you make your charcoal from long pieces of wood, you will probably find long pieces of charcoal. Simply take a shovel edge and sharply strike against the sides of the long pieces to break them up into smaller segments.

Your 55 gallon drum cooker should last for a long time. When it finally wears out find another used drum and continue to have fun making charcoal NEWTON'S METHOD.

CLOSING NOTE: If you would care to learn more about Charcoal Making or would like to make Charcoal on a larger scale send for my Illustrated, Instructive Booklet which reflects my 20 plus years experience making charcoal. This Booklet gives enough data and instruction so that you too can enjoy making charcoal for profit as well as fun using NEWTON'S METHOD.

For Booklet send \$5.00 to: J.J. Newton, 1497 Scandia Road, Warren, PA 16365

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