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Member of the International HUMANA People to People Movement

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How to construct a Firewood Saving Stove



A Manual on How to Construct a
One Pot Firewood Saving Stove
Step by Step Instructions

Some Reasons for You to Construct a Firewood Saving Stove.

- The correctly constructed stoves saves up to 50% more firewood compared with using a traditional three stone fire. Your family will therefore use only half the amount of firewood when you start using the stove.
- You will save money if you buy the firewood or you will save time, if you collect the firewood.
- You will improve the environment by saving trees and wood.
- The stove reduces the amount of smoke in the kitchen - and hereby the health for people cooking. Inhaling smoke in the kitchen is just as unhealthy as smoking cigarettes.
- Often small children get injured by fire. The stove reduces such accidents.
- The stove improves hygiene in the kitchen and pots used on the stove are easier to clean than those used on a three stone fire.
- **The stove is easy to construct and it is made from locally available materials**.

HOW DOES THE STOVE WORK.

A fire burns with different temperatures. The more oxygen it receives the hotter is the fire. A hot fire can be 10 times as hot as a cool fire and it utilizes the firewood fully.

A cool fire releases more smoke because of gasses that are not fully burned. If you look at the three stone fire you might notice that the fire at the edges burns with more smoke - because it is cooler at the edges and
hot in the middle.

This stove promotes a small hot fire - that will give less smoke - and utilizes the firewood more effective.

COMMON MISTAKES

Making the stove too big or too small: It is important that the stove has the right size. If the distance from the firewood to the pot is too long it will not utilize the heat efficiently. If the stove is too small, you will have to chop the firewood too much and you might not use the stove.

Making the pot rests too thin or too thick: If they are too thin they will not effectively let the smoke escape from the stove. If they are too thick they will allow too much heat to escape and the stove will be less effective!

Take care that the clay mixture is not too wet or too dry. Using the correct amount of water in the mixture, will make the stove stronger and there will be less cracks while drying.

OTHER TYPES OF FIREWOOD SAVING STOVES.

There exist many types of firewood saving stoves. Some have two pot holes and a chimney. The chimney ensures that there is no smoke in the kitchen, but it is less firewood saving and more difficult to make. The one pot stove can be placed in the middle of the kitchen, so that the family can sit around the stove in the evenings - or it can be placed in the corner of the kitchen - depending on the wish and need of the family.



Step 10 - The Pot Rest

-Use a piece of clay to make the pot rest. About 3 fingers wide and 1 finger thick (5 cm x 1 cm).

- Make small cuts in the pot rest and on the stove where it is to be placed (to make firm contact). Also add a little water on the two surfaces.

- Press the pot rest well into the stove and shape it nicely. See the next picture.



Step 11 - Place the Pot Rests

-Place three pot rests as in the picture. (It is important to make three and not any other number)

-The pot rests allow the smoke to come out and the use of pots of different diameter

- Note: If the pot rests later fall off, you must replace them. Without these the stove will not function well.



Step 12 - Let the Stove Dry.

- Let the stove dry completely before use. It will take 2 to 3 weeks depending on the weather.

- Some cracks might appear while the stove dries. Repair these with some left over clay mortar. It is best if you keep a bit of the original mixture for this purpose.

- Cracks might come later. These can also be repaired using the same type of mortar.



Step 1 - Collect Material

- Material needed are clay, sand, 7 bricks and water.

-The best clay to use is from the small anthills found in dambo areas. Other types of anthill clay are also good.

- Where anthill clay is not available it may be necessary to dig deep to find good clay.

-Remove stones, sticks etc. from the clay and from the sand.



Step 2 - Prepare Material

-Crush the clay into dust.

-Soak it in water overnight.

-Mix sand and clay in the ratio of 1 sand and 2 clay.

- Add water until the mixture is easy to work with.

-To check if the mixture is good, form a ball and drop it to the ground. If it splashes out, the mixture is too wet., if it goes into pieces, it is too dry



Step 3 - Foundation

-Decide upon where to place the stove. It can be placed anywhere in the kitchen but it must face the door in order to get enough air for the fire to burn well.

-Lay four big clay bricks (15 cm x 20 cm) as a square

- Fill up the hole between the bricks half way with clay and plaster the bricks out side and on top.



Step 4 - Heat Insulation

- Fill approximately 5 cm of ash between the bricks and cover with clay.

-The ash acts as a heat insulation so the heat from the fire does not go down into the ground.



Step 5 - Build Up the Stove

- Use a 5 l oil paint tin - or a similar tin as a mould. The tin should be 17 - 20 cm in diameter.
- Place the tin on the middle of the foundation - on top of the ash insolation layer.
- Put the clay and sand mortar around the tin until it is 4 cm from the top of the tin to make the firebox 19 - 20 cm high.



Step 6 - Make the Firewood Rest.

-Lay three bricks as in the picture for foundation.

-Plaster the bricks with clay mortar.

- Leave the stove to rest over night.



Step 7 - Shape the Stove

- Move the tin.
- Shape the outside of the stove using a knife or building trowel.
- Shine the stove using water.



Step 8 - Carve Out the Mouth for Firewood.

- Carve out the side opening (mouth) for firewood using a building trowel or a knife.
- The size should be the same as the hole inside the stove. Don't make it small because then you will need to chop the firewood too much.
- Take care that the stove wall on top of the mouth is not less than 5 cm or it can easily break.



Step 9 - Carve the Edge.

-Carve the edge to 45 degrees using a knife. This will make it possible to place the pot rests and to use pot of different diameter.