El Domo
Product Design Agency

Open Source Water Filter

ENGLISH INSTRUCTIONS

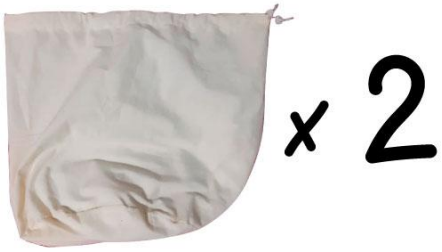
Materials:

- 4 5-gallon buckets

- 2 plastic faucets

- A hose and an adapter for the tap

- 2 cloth bags



Filtering materials:

- Moringa seeds
- Charcoal
- Clean beach or desert sand
- Gravel

Building process

Preparation of materials:

To begin the construction of the filter it is necessary to have all the water buckets clean and in the best conditions to store and filter the water.

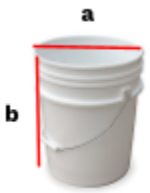
In this case, the buckets were second-hand and were dirty or stained with paint. Therefore they were cleaned with thinner and washed with detergent and a brush or sponge for scrubbing. It was left to dry in the sun so that it did not have traces of thinner or any other contaminant.

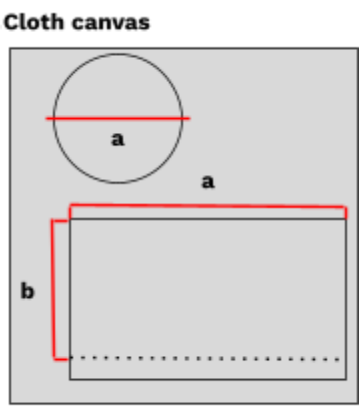
Before starting to build the filter, the buckets are again cleaned with a damp cloth and a clean dry cloth to remove dust or any other traces of dirt, etc.

Make two blanket bags to put the fine minerals (sand and coal), so they are easier to handle and replace. These bags also function as a filter, so that the materials do not mix with each other.

To make the bag:

a. Measure the circumference of the bucket and trace a circle on the fabric of the same measure.
b. Measure the total height of the bucket and add 2" (for the fold to insert the cord)
c. Draw a rectangle the size of the height and circumference of the bucket.
d. Sew the circle to the base and then join both b sides. Sew the edge towards the 2" line.
e. Insert the cord in that space, make two holes in the edge so you'll be able to remove the cord.





Sample of the finished bag

Manufacturing:

1. After preparing the buckets, the holes are made to introduce both faucets with a drill and a paddle bit.
    - In the first bucket (where we will put the moringa seeds) the hole must be at least 10 cm from the base, since dirt particles, earth, etc. They will remain suspended at the bottom, and only the water already filtered by the moringa will be allowed to pass.
    - In the second bucket (where we will put the sand) the hole should be about 5 cm from the shore so that the filtered water falls directly into the sand.

2. Assemble the shut-off valve, through which the passage from the first stage to the second will be allowed, once the filtration with the moringa is completed. The shut-off valve is made by adapting a hose to the faucet.

1. With a drill and the paddle bit, make the hole in the last bucket, where the coal will be included, put the faucet. Place the faucet, put a little Teflon on it to prevent leaks, secure it with a nut on its thread.

2. With the drill and a normal ¼ ”or smaller bit, drill several holes in the base of bucket number 2 (where the sand goes) and in number 3 (where the gravel goes). Through these holes, the water will pass from one station to another.

Filter assembly:

To assemble the filter it is necessary to follow the following steps:

1. Placing a base of at least 30 cm will serve to seat the filter and use it safely and easily.
2. On that base, the bucket is placed where the coal will be placed (with the faucet). Inside the bucket, insert a cloth bag, making sure that it occupies all the space in the boat.
3. Fill the bag **up to the middle of the bucket with previously crushed charcoal**.
4. Insert the second bucket on and into the first one (for gravel, with the holes in the bottom), trying to place it well on top of the charcoal.
5. Fill the bucket halfway **with gravel or slightly crushed gravel**.
6. Put the next bucket (the sand one, with the tube and the holes in the bottom) inside the gravel bucket, place a cloth bag to accommodate it, and fill it almost completely with clean sand.
7. Put a lid on the bucket containing the sand.

Preparation of the moringa bucket:

It is best if this is done before using the filter.

1. Fill the bucket with water, coming from the source that you have nearby. Generally, it will be dirty water.
2. Pour 2 tablespoons of moringa seed powder for each liter of water you want to filter, in this case, it is 5 gallons so it will be 2 cups. (You can grind the moringa seeds with a grinder, grinder, blender, etc.)
3. Shake and leave for 5 or more hours. The dirt in the water will separate leaving clean water ready to be filtered.

Note: It is important to keep the faucet/valve closed while the moringa works so that the water does not run out.

How to use:

After letting the moringa water act, this can be part of the filter and begin its use.

1. Carefully place the moringa bucket on top of the lid of the sand bucket.
2. Assemble the valve to connect the upper bucket of the moringa with that of the sand.
3. Open the faucet and let the water filter for half an hour.

The water is best collected if the faucet is kept open during the process and is stored separately, to avoid becoming dirty with the particles of the charcoal (due to time).