

Biosand Filter - Operation & Maintenance

Source Protection

Safe Transportation

Sedimentation

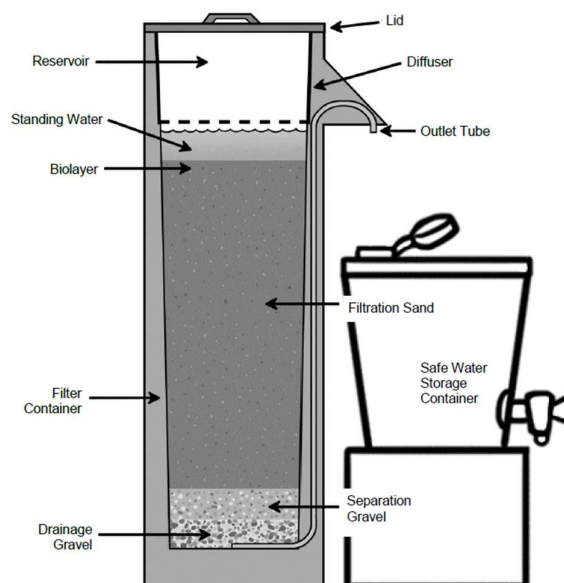
Filtration

Disinfection

Safe Storage

Important aspects of Biosand Filter (BSF) design

- The sand is what makes the filter work. It must be selected and prepared properly. We check the sand preparation by measuring the flow rate.
- Once installed, the sand column is always completely filled with water (saturated).
- The filter is operated in batches (also called intermittent operation). The filter is most effective when there are pauses (breaks) between batches and when it is used every day.
- A diffuser basin protects the sand surface from disturbance when water is poured into the filter.
- When water is not flowing through the filter, there should be 4-6cm of water above the sand surface.
- The outlet pipe or tube is higher than the top of the sand because the outlet determines the water level. Taps or hoses are not allowed because they change the water level.
- A safe storage container is required to protect the treated water.



Set-up/Installation

Filter bodies and sand preparation can be done anywhere, but the filter needs to be installed where it will be used and then not moved. Installation is done by a trained technician. The filter should be installed away from sources of contamination.

It takes about one month for the filter to reach its full effectiveness in removing pathogens. During that month, an invisible biological layer forms in the top few centimeters of sand that increases the filter's effectiveness.

Daily Use

Water Source

Use the cleanest water source available. The same source of water should be used every day. Seasonal changes in water source are allowed, but the filter won't work as well for the first few days after the source is changed.

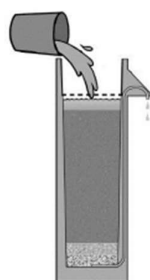
Source water should not be chlorinated. Source water can be turbid, but if turbidity is more than 50 NTU, maintenance will be required often.

Correct & Consistent Use

User pours 1-4 batches of water into the filter each day. The filter works best if the batches are spread out during the day as much as possible. Missing the occasional day is not a risk, but the filter shouldn't go more than 2 days without water being poured into it.

The filter has a diffuser basin and lid that should always be in place during use. A safe storage container should be used to collect the treated water and protect it.

How Does a BSF Work?



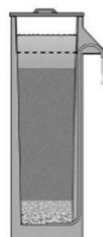
1 Pour a bucket of dirty water in the top of the filter. Water will start to flow out of the tube. Put the lid back on the filter.

The filter should be filled between 1 and 4 times every day.



2 The top of the filter is called the reservoir. It can hold 12 litres of water—about 1 bucket.

Water coming out will flow fastest when the reservoir is full.



3 It usually takes at least 1 hour for the water to stop flowing.



4 After the water stops flowing, the filter must rest. The filter must rest for at least 1 hour before pouring more water in.

This is called the **Pause Period**.

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Do Not

- Put a tap or hose on the filter outlet hose or pipe.
- Put anything else inside the filter - use the filter only for water
- Put chlorine into the top of the filter.

Maintenance**Cleaning**

Wash the diffuser, filter lid, and outlet tube of the filter once per week using clean water mixed with chlorine or soap.

Maintenance

Maintenance called 'swirl & dump' is required to clean the top of the sand when the flow rate slows down. Swirl & dump consists of adding a bit of water to the filter, disturbing the sand with your fingers, so that the water becomes cloudy, then scooping out and getting rid of the cloudy water. Then make the sand surface flat again. This may need to be repeated a few times, until the flow rate is back to normal. Wash your hands after doing swirl & dump. Note: BSFs continue to treat water effectively even when maintenance is required.

Repair & Replacement

Lids, diffusers and storage containers may need replacement every few years. The sand never needs to be replaced.

Safe Water Storage & Handling

A safe storage container should be used to collect the treated water and protect it. A safe storage container has a lid and a tap or spout to get the water out. Use one container to collect water from the source, and a different container to collect the filtered water - using the same container for both will recontaminate the filtered water.

For water storage containers with a wide opening, wash them weekly, using clean water mixed with chlorine or soap. For other containers and to learn more about the cleaning procedure, see the link below.

More Information

Details and references: www.hwts.info/products-technologies/074f5f20/Biosand-Filter

Cleaning water storage containers: <https://washresources.cawst.org/en/resources/5bec2aa3/selecting-a-drinking-water-container-for-household-use?queryId=633d6d56353b808d5b97ebb174cc704c>

Biosand Filter Use and Maintenance Videos: <https://washresources.cawst.org/en/collections/dff54fff/biosand-filter-use-and-maintenance-videos?queryId=333d11f45265be561af2c28b2d199060>

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