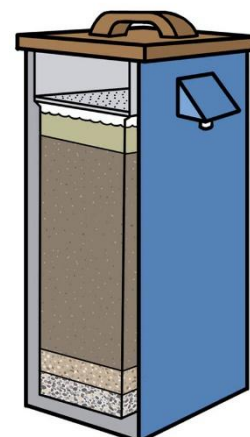


Biosand Filter - Technical Information

Source Protection	Safe Transportation	Sedimentation	Filtration	Disinfection	Safe Storage
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What is it?

Biosand filters (BSFs) work because of columns of finely crushed rock (sand) on which microorganisms are living. Sand selection and preparation is crucial for filter performance. The BSF body can be made from concrete, plastic, or stainless steel. Water is poured into the top of the filter and spends a period of time in contact with the sand. This allows the microorganisms living in the sand to remove pathogens from the water. Each new batch of water displaces the batch before.



Performance

Microbiological Removal Effectiveness:

Type of pathogen	Effectiveness
Bacteria	Effective (>90%)
Viruses	Somewhat Effective (>80%)
Protozoa (Cryptosporidium & Giardia)	Very Effective (>99%)
Helminths	Very Effective*

*Assumption based on pathogen size (limited evidence)

Other Parameters

High removal of turbidity. Removes iron. Can be modified to remove arsenic (see Kanchan Arsenic Filter). Not effective at removing most other chemical contaminants, including salinity and other dissolved solids.

Source Water Requirements

Turbid water (>50 NTU) should be settled or strained before filtering to reduce maintenance requirements. Biosand filters are not the most appropriate technology for a chlorinated water source, even if it's only chlorinated sometimes, because chlorine will make it not work as well.

Capacity & flow rate

Treats up to 48L/day in intermittent operation. The flow rate for household sized filters is 0.29-0.6L/minute, which is a faster flow rate than most other filters.

Protection from recontamination

None. Separate safe water storage container required.

Ease of Use & Acceptability

Operation & Maintenance

Requires that water be poured into the filter every day or two to develop and maintain the microbiological community.

It is recommended that the flow rate not exceed 0.4 m³/m²/hr, this ensures high removal effectiveness. Simple maintenance is occasionally required when the flow rate slows down.

Repair & Replacement

Lids and diffusers may need replacement every few years.

User Considerations & Preferences

Concrete filter bodies are heavy. BSFs are not moveable once installed, making them unsuitable for people who move often.

Feasibility

Availability

Concrete BSFs can be made anywhere. Making steel molds to construct concrete BSFs requires skilled welders. Other filter body types need a manufacturing facility or can be imported. Anyone can be trained to construct and install filters.

Cost

US\$12–100, depending on filter body and labor costs.

Size & Weight

Average size is 0.9 m tall by 0.3 m wide. Empty filter bodies weigh 70–135 kg (concrete body) or 3.5 kg (plastic body).

Lifespan

Ten years or more. Concrete filter bodies are particularly long lasting. Sand never needs to be removed & replaced.

More Information

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

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