

Porous Plate Slow Sand Filter

A new slow sand filter design uses a plastic porous plate to eliminate gravel and coarse sand, simplifying installation, cleaning, and transport for point-of-use water treatment.

For over 100 years, slow sand filters (SSFs) have been utilized as a means of treating drinking water. In the filter, water experiences biological degradation of organic material over the course of eight or more hours. Due to this process, these types of sand filters are often referred to as biological reactors; however, most modern SSFs use gravel and coarse sand layers as a base, making installation and cleaning of these filters tedious. These filters can be used in underdeveloped countries to help treat drinking water, but must be relatively easy to use and maintain.

Researchers at Purdue University have developed a new design for a slow sand filter that utilizes a plastic porous plate enclosed in a plastic woven mesh bag and is housed in the bottom of the filter. This design modification increases the usability of the filter significantly, eliminating the need for gravel and coarse sand layers. Sand that is used in the top part of the filter is the only necessary media for the operation of this filter; the larger sand capacity increases the volume of water that can be treated. The simple design allows the filter to be installed at any point-of-use location by anyone given it only requires the addition of sand; it is easy to transport. The filter is easily cleaned by removing and rinsing the sand.

Advantages:

- Only uses sand
- Easy installation and cleaning
- Increases amount of treated water
- Inexpensive
- Easy to transport to remote locations

Potential Applications:

Technology ID

2016-JAFV-67399

Category

GreenTech/Water & Resource
Management

Authors

John Alan Howarter
Chad T Jafvert

View online



-Water filtration

TRL: 7

Intellectual Property:

Copyright, 2016-05-31, United States

Keywords: slow sand filters, biological reactors, drinking water treatment, water filtration, point-of-use filtration, simple sand filter design, porous plate filter, portable water filter, low-cost water treatment, easy-to-clean filter, Clean Water, Drinking Water, Green Technology, Mechanical Engineering, Plastics, Water, Water Treatment