

Rainwater harvesting-II

There are different types of filters in practice, but the basic function is to purify water. Different types of filters are:

1. Sand Gravel Filter

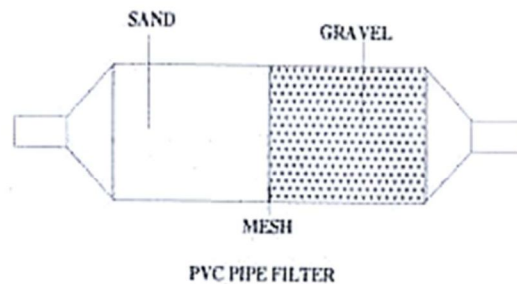
These are commonly used filter which are constructed by brick masonry. They are made up of pebbles, gravel, and sand. Each layer should be separated by wire mesh.

2. Charcoal Filter

These filters can be made in-situ or in a drum. Pebbles, gravel, sand, and charcoal is filled in the drum or chamber. Each layer is separated by wire mesh. The thin layer of charcoal is used to absorb odor if any.

3. PVC -Pipe filter

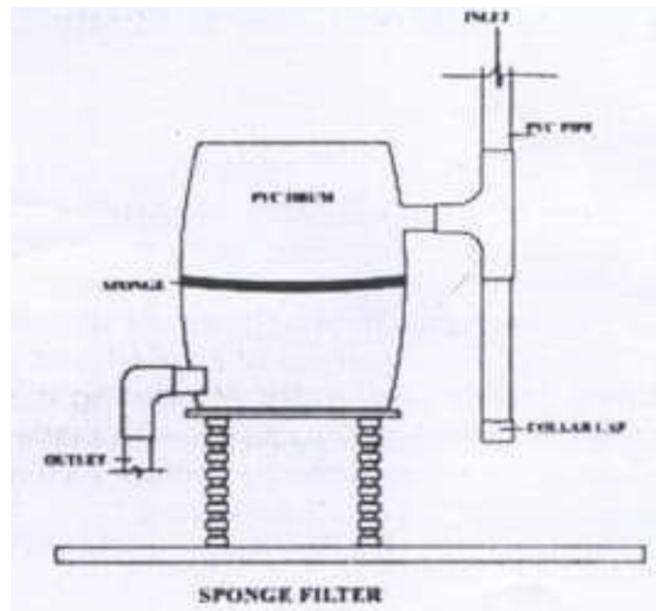
This filter can be made by PVC pipe of 1 to 1.20 m length; Diameter of pipe depends on the area of roof. Six inches dia. pipe is enough for a 1500 Sq. Ft. roof and 8 inches dia. pipe should be used for roofs more than 1500 Sq. Ft. Pipe is divided into three



compartments by wire mesh. Each component is filled with gravel and sand alternately. A layer of charcoal is inserted between two layers. Both ends of the filter should have a reduction of the required size to connect the inlet and outlet. This filter is placed horizontally or vertically in the system.

4. Sponge Filter

It is a simple filter made from PVC drum having a layer of sponge in the middle of drum. It is the easiest and cheapest form filter, suitable for residential units.



Methods of Rooftop Rainwater Harvesting

1. Storage of Direct Use

In this method, rainwater collected from the roof of the building is diverted to a storage tank. The storage tank has to be designed according to the water requirements, rainfall, and catchment availability.

Each drainpipe should have a mesh filter at the mouth and first flush device followed by a filtration system before connecting to the storage tank. Each tank should have an excess water overflow system.

Excess water could be diverted to the recharge system. Water from storage tanks can be used for secondary purposes such as washing and gardening etc. This is the most cost-effective way of rainwater harvesting.

The main advantage of collecting and using rainwater during the rainy season is not only to save water from conventional sources but also to save energy incurred on transportation and distribution of water at the doorstep.

This also conserves groundwater, if it is being extracted to meet the demand when rains are on.



Fig: A storage tank on a platform painted white

2. Recharging Groundwater Aquifers

Groundwater aquifers can be recharged by various kinds of structures to ensure the percolation of rainwater in the ground instead of draining away from the surface. Commonly used recharging methods are:-

- Recharging of bore wells
- Recharging of dug wells.
- Recharge pits
- Recharge Trenches
- Soakaways or Recharge Shafts
- Percolation Tanks