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## A complete Review on industrial water filters

Mr. Avinash Balasaheb Gojare Ms. Snehal Someshwar Jamdade Ms. Supriya Dattatray Kale

Student

M pharmacy

Quality assurance technique

Dattakala college of pharmacy daund Pune.

### Abstract :

*It is start with a description of sterile filtration application and performance requirements.*

*Filtration devices sizing system design and operation are included.*

*Filtration process is very important in pharmaceutical industry. different types of filter media used in pharma.*

*Water is extensively used in the sterile pharma industry, and it is also necessary to have a good filter for good quality of water. it is necessary to remove viruses, bacteria, microbes etc. found in water so we have use to filter it with good quality.*

**Keywords :** Multi grade sand filter, Activated carbon filter

### Introduction

#### **Multigrade sand filter.**

A latest concept in the water treatment. in this filter consist of vertical or horizontal pressure sand filters,

It contains multiple layers of coarse and fine sand in to fix proportion.

For retaining large and small suspended solid and un-dissolved impurities like suspended solid, dirt, dust, all visible particles it is kind of deep filter bed with adequate pore dimensions compared to conventional sand water filter .

It is low cost pre-treatment system as compared to ion exchange ( softener and deionizer) and membrane system or reverse osmosis.

It is high throughputs and high dirt holding capacity and also reduce turbidity.

Multigrade sand filter protect ion exchange resin and membrane from physical fouling due to suspended impurities present in water.

**Working principle**

The multigrade sand filter works on the principle of retention and removes the physical impurity inside the water.

Physical impurity is found under row water like suspensible solid, dirt, dust, stone, soil etc. It filters multigrade sand to remove physical impurity and all the visible particles inside the water up to 50 micron.

Multigrade sand filter or pressure sand filter water passed through multilayer of media filter consisting graded sand layers.

The physical impurity and contaminant in the water are captured in the media bed and filtered water pass in the discharge manifold at the bottom at the tank.

The next step or final last step is backwashing.

In this process the captured physical impurity and contaminant effectively removal of media bed.

After backwashing filter rinsed in row water and required quantity of water achieved and put back in services.

**Use**

Multigrade sand filter is used to remove the suspended solid, dirt, dust, stone, soil and all visible particle inside the water.

**Features and advantage**

Custom size and configuration.

Ideal for pre-treatment.

It is designed for commercial and industrial use.

Durable and mild steel tank.

Operation option are manual and automatic.

Maximum carbon utilization.

**Activated carbon filter.****Introduction**

Activated carbon filter accepted system in water filtration technique.

The treated water is free from organic compound, (chlorine and ammonia mixture).

Activated carbon filter system safe from oxidation or organic fouling. This is also utilised in pre treatment of reverse osmosis and Demineralized water plant.

**Working principle.**

Activated carbon filter works on the principle of absorption.

Activated carbon filter removes unwanted odour, colour and taste present in water, and also remove volatile organic compound. Activated carbon filter filter medium adsorbs or react with pollutant molecules and the filtered water is drained out.

Activated carbon filter filter medium used to remove contaminant. It is natural material derived from coconut shell etc.

Activated carbon filter filter system unable to remove all of contaminant such as microbes, sodium fluoride and hardness of the water.

However special activated carbon filter water treatment is necessary for removing lead and other heavy metals.

## Two types of Activated carbon filter

Granules activated carbon (GAC)

Powdered activated carbon (PAC)

Granules activated carbon are used purifying drinking water.

Where as powdered activated carbon used in treating remove toxic organic along with ,and Total organic compound.

Industrial wastewater and highly contaminated municipal wastewater.

### Features and advantage

Operation are manual and automatic.

Can be used for pre - treatment.

Remove odor bad, taste, chlorine and lead.

Available in granules and powered.

Costom size configuration.

Maximum carbon utilization.

### Conclusion :

Filtration is useful and important operation in the pharmaceutical industry. The use of filter is bacteria, viruses, microbes, challenges studies. The focus is on quality in the pharma industry, so we cannot compromise with the equipment.

We have to follow the standard operating procedure in the pharma industry and maintain our standard for good documentation practices and good manufacturing practices.

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