

Characteristics of multi functional type MF-I Filter

1. INTRODUCTION

Asahi Fiber Industry's MF- I Filter element is formed as cylindrical shape which is adhered at each intersection of fibers by heating the thermal bonded nonwoven fabric. There are two type of materials which are polyolefin and polyester.

Since we are making MF- I filter by ourselves for all the process from foaming to completion by using original unique machine which is designed and made by us, so we can produce the product in small lot to large lot.

Fig 1. Is the products of MF- I filter element. As you can see, we can make small parts to large parts according to customers request.



Fig1. Products of MF- I Filter element

2. FEATURE OF MF-I FILTER ELEMENT

- ① It is formed as cylindrical shape by adhering thermal bonded polyolefin nonwoven fabric rigidly by heating it.
(Fig2.)
- ② Since filtration layer is reticulation structure of three dimensions , mechanical strength is very high.
- ③ By choosing the grade of fiber, we can adjust the purification level of filter (Fig3, 4) .
- ④ Since the structure is three dimensional reticulation , the porosity is high and pressure drop is small. So the flow rate can be high.
- ⑤ Since it is binder-less, the elution of impurities will not be generated from filter element itself.
- ⑥ To improve heat resistance of filter element, we will use polyester nonwoven fabric to make products.

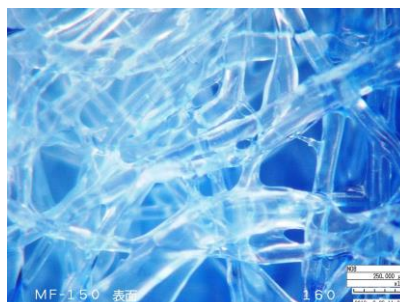


Fig2. Adhering of fibers
【model: MF- I 50】



Fig3. Surface of filter layer
【model: MF- I 50】



Fig4. Cross section of filter layer
【model: MF-025】

3. CHARACTERISTICS OF MF-I FILTER ELEMENT

3-1) Relationship between aeration speed and air flow resistance of MF- I filter element

Fig5. shows the measurement result of air flow resistance when the air passed each grade of MF- I Filter element as Aeration speed is as parameter. Thickness of each filter element is 5mm. As you can see from Fig5. we can make filter of various type of air flow resistance by making it from various grade of fiber. MF-005 is the MF filter element which is made from the fiber sheet for high quality filtration.

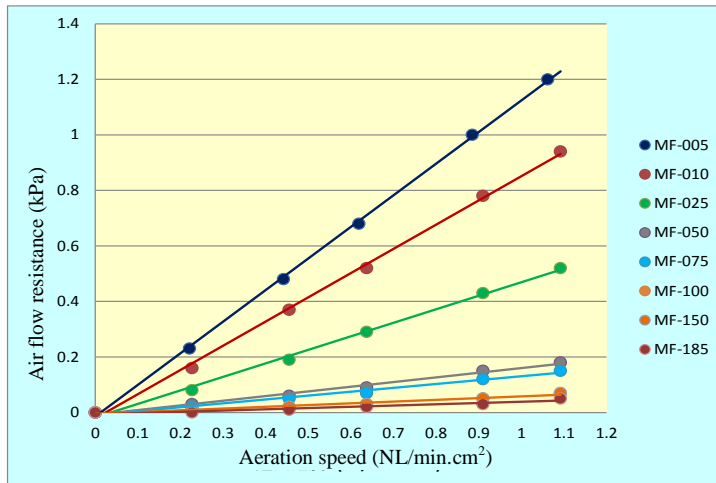


Fig5.
Relationship between aeration speed and air flow resistance of various grade of MF- I filter element.

3-2) Relationship between water conduction speed and water flow resistance of MF- I filter element

Fig6. shows the measurement result of water flow resistance when the water passed each grade of MF- I Filter element as water conduction speed is as parameter. Thickness of each filter element is 5mm. As you can see from Fig 6. we can make filter of various type of water flow resistance by making it from various grade of fiber. MF-025 is the MF filter element which is made from the fiber sheet for regular quality filtration.

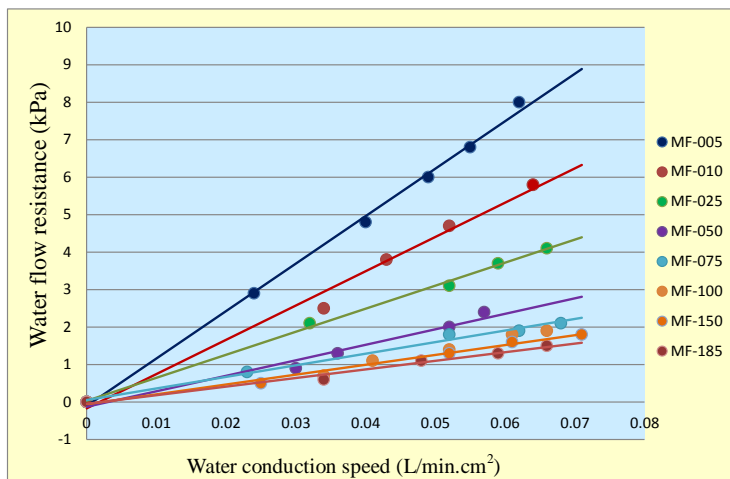


Fig6.
Relationship between water conduction speed and water flow resistance of various grade of MF- I filter.

3-3) Filtration clarity of MF- I Filter element

Filtration clarity of MF- I Filter element is decided by measuring the gap of particle in between raw solution which particles are added” and “filtrate which has passed through the equipment by constant rate filtration which is described as Fig7. in certain time”

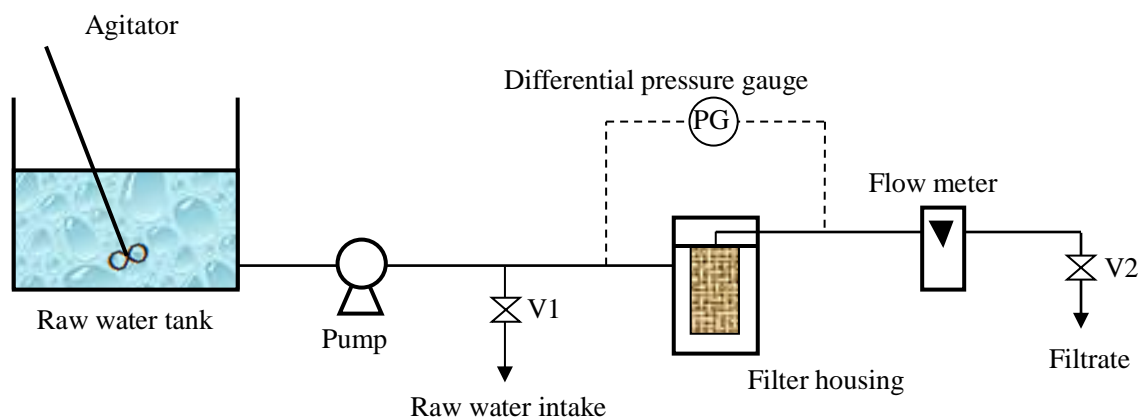


Fig7. Flow sheet of filtration

Type of particles which we put in raw water tank is selected from JIS standard particle for experiment according to the measured porosity and water flow resistance of MF- I Filter element.

We use JIS standard particle, blend of several type of JIS standard particle or blend of original particles by our company.

The few example of JIS standard particles which we use to discriminate the filtration clarity of MF-I Filter element is listed in Table.1

Table1. Example of JIS standard particles

JIS standard particles	Range of particles diameter	Material
Class 1	45 μ m~300 μ m	Silica sand
Class 7	5 μ m~75 μ m	Kanto loam
Class 9	2 μ m~16 μ m	Talc
AC dust Fine(A2)	1 μ m~100 μ m	Arizona test dust

Fig8. is the rejection ratio of particle by MF- I filter element made by each grade of thermal bonded fiber sheet. The thickness of the Filter element is 5mm.

As you can see from Fig 8. we can make filter of various filtration clarity by making it from various grade of fiber sheet. We will adjust filtration clarity as required by customer and it is easy to control the quality of the liquid by using our filter.

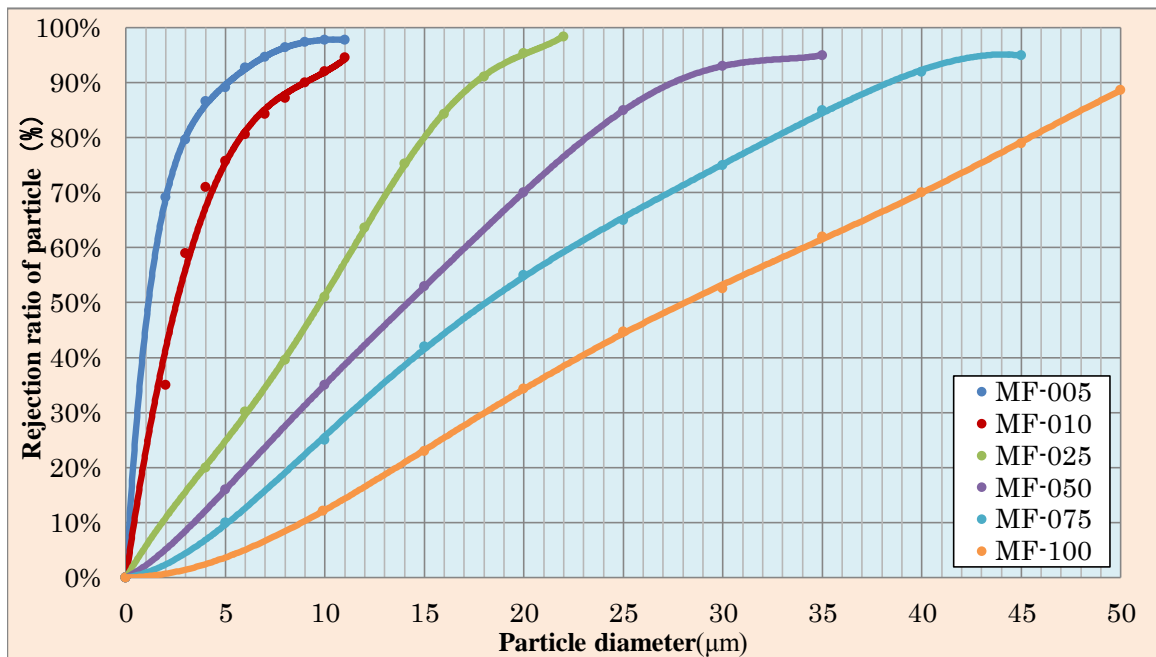


Fig8. Rejection ratio of particle by MF- I Filter element

4. USAGE OF MF-I FILTER ELEMENT

Table2. Usage of MF- I Filter element

Usage	
Filter for liquid	Pre-filter of pure water purifier
Filter for air	Pre-filter of pure water production
Filter for paints	Muffling material
Core filter media of activated carbon filter	Water collecting pipe
Filter parts for purifier	