

## Characteristics of multi functional type MF- II Filter

### 1. INTRODUCTION

Asahi Fiber Industry's MF- II Filter element is cylindrical shape filter which another type of nonwoven fabric or filtration paper is wrapped in the MF- I filter and it is an asymmetric structure which has the density gradient from outer to inner.

Filtration clarity of MF- II Filter can be higher than MF- I filter by selecting the wrapped nonwoven fabric or filtration paper.

Since we are making MF- II 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 product of MF- II filter element. As you can see, we can make small parts to large parts according to customers request.



Fig1. Products of MF- II Filter element

### 2. FEATURE OF MF- II FILTER ELEMENT

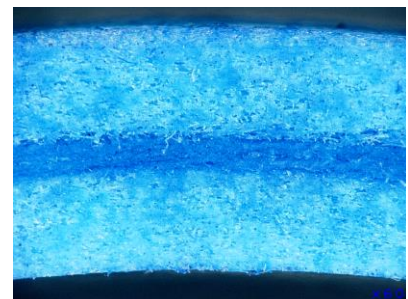
- ①The filtration layer is an asymmetric structure from outer to inner and the filter has the density gradient, and improvement of filtration clarity so it can catch more cake.(out→in type)
- ②The filtration layer is an asymmetric structure from inner to outer and the filter has the density gradient, and improvement of filtration clarity so it can catch more cake.(in→out type)
- ③We can put the particular function to the filter by constructing it by putting functional non-woven fabric or filtration paper. Fig2. is the example for the macrograph of functional filter element.



【model:MF II -65962】



【model:MF II -64111】



【model:MF II -28113①】

Fig.2 MF- II The macrograph of filter layer of filter element

### 3. CHARACTERISTIC OF MF-II FILTER ELEMENT

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

Fig3. shows the measurement result of air flow resistance as aeration speed is as parameter when the air passed each grade of MF- II Filter element which two layers of various type of nonwoven fabric or filtration paper is wrapped in the MF- I filter (MF-005). Thickness of each filter element is 3mm. As you can see from Fig3. we can make filter of various type of air flow resistance by selecting the wrapped nonwoven fabric or filtration paper.

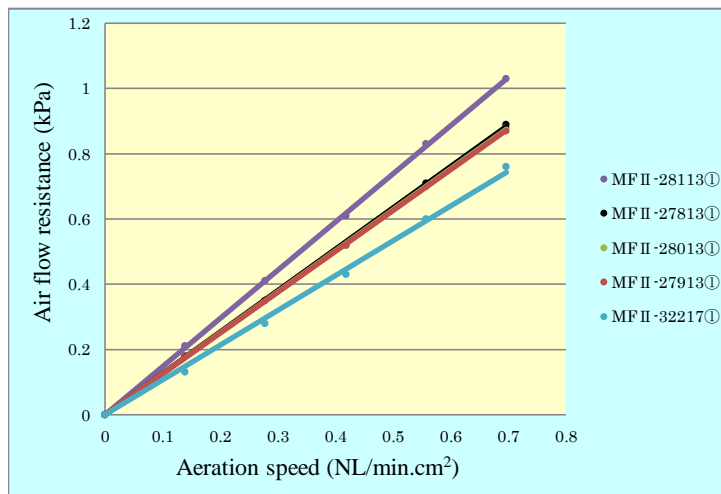


Fig3.  
Relationship between aeration speed and air flow resistance of each MF- II filter element which two layers of various grade of nonwoven fabric or filtration paper is wrapped in

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

Fig3. shows the measurement result of water flow resistance as Water conduction speed is as parameter when the water passed each grade of MF- II Filter element which two layers of various type of nonwoven fabric or filtration paper is wrapped in the MF- I filter (MF-005). Thickness of each filter element is 3mm. As you can see from Fig3. we can make filter of various type of water flow resistance by selecting the wrapped nonwoven fabric or filtration paper.

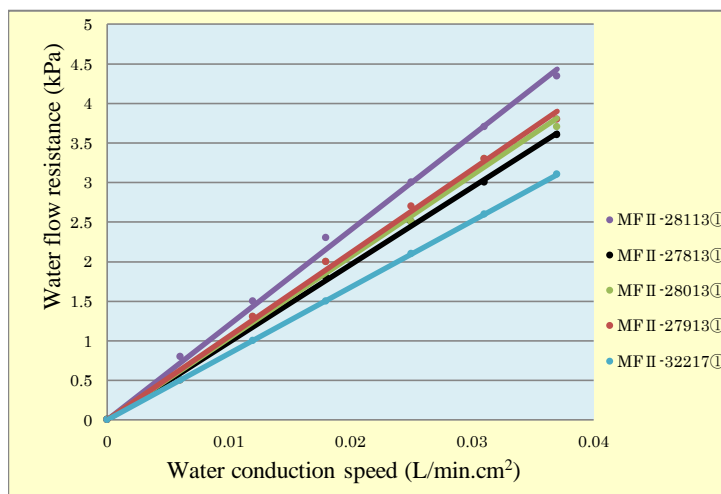


Fig4.  
Relationship between water conduction speed and water flow resistance of each MF- II filter element which two layers of various grade of nonwoven fabric or filtration paper is wrapped in

### 3-3) Filtration clarity of MF- II Filter element

Filtration clarity of MF- II Filter element is discriminated by measuring the gap of particle in between “raw water which particles are added” and “filtrate which has passed through the equipment by constant rate filtration which is described as Fig5. in certain time”

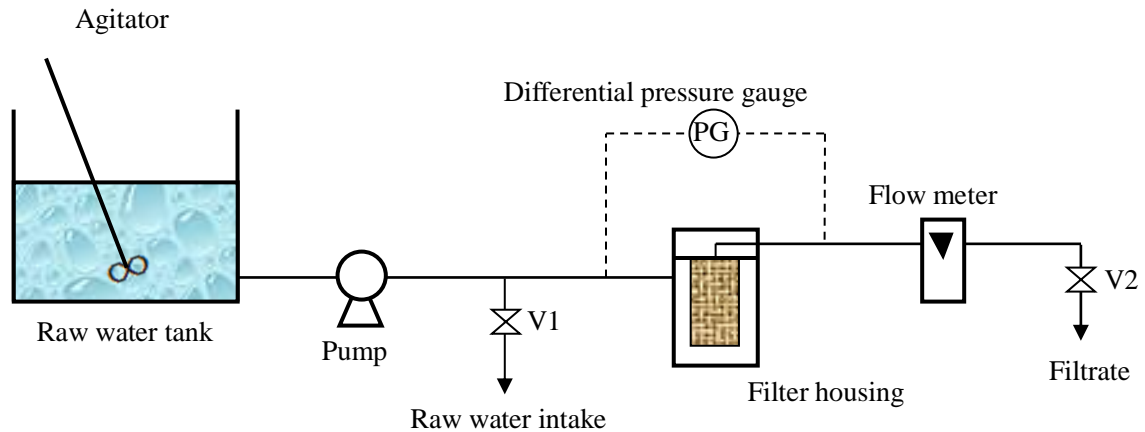


Fig5. Flow sheet of filtration experiment

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- II 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- II Filter element is listed in Table.1

Table1. Example of JIS standard particles

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

Fig6. is the rejection ratio of particle by each types of five MF- II filter elements which have two layers of different nonwoven fabric is wrapped in. The thickness of the Filter element is 3mm and the filtration rate is kept at 12m/hour.

As you can see from Fig 6. we can make filter of various types of filtration clarity by selecting the wrapped nonwoven fabric. We will adjust filtration clarity as required by customer and it is easy to control the quality of the liquid by using our filter.

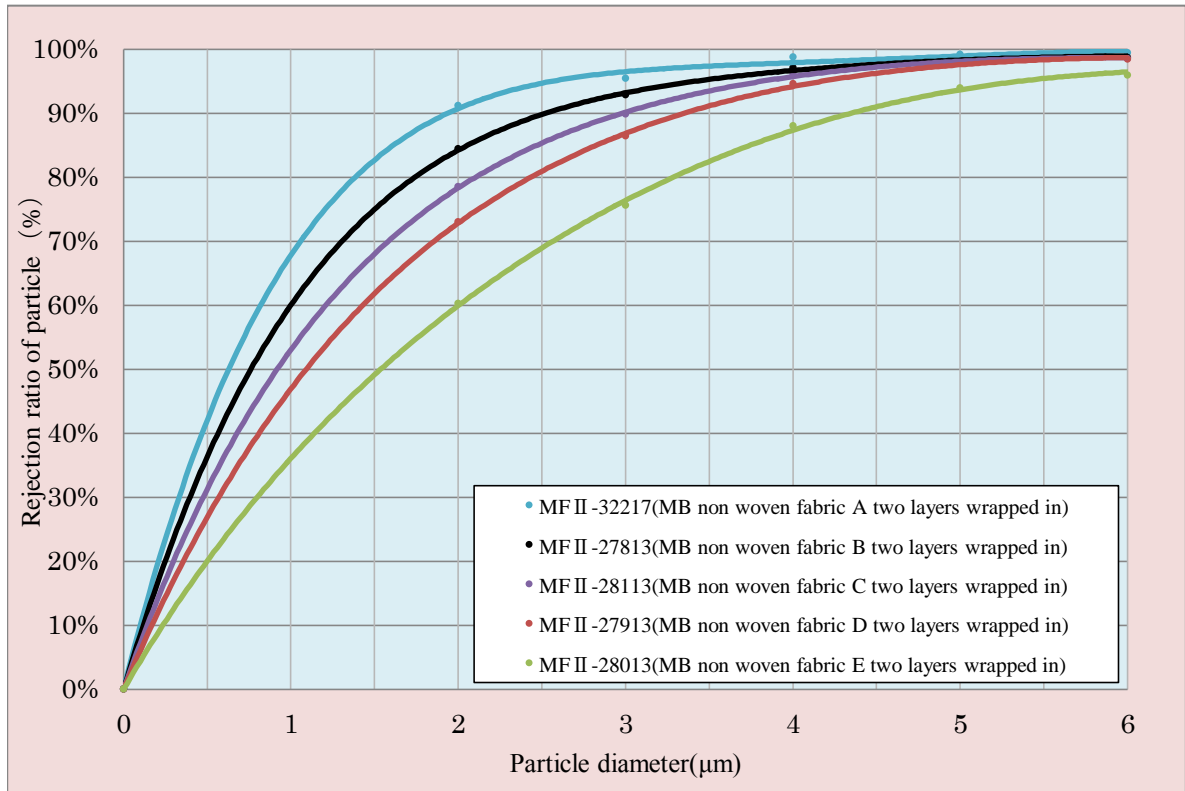


Fig6. Rejection ratio of particle by MF- II Filter element

#### 4. USAGE OF MF- II FILTER ELEMENT

Table2. Usage of MF- II Filter element

Usage	
Filter for liquid	Filter for gas
Filter for air	Filter for dust collector
Filter for paints	Pre-filter of pure water purifier
Filter for gasoline refinement	Oil mist separator