

FIBER ROD characteristics

The characteristics of FIBER ROD (SL/EL/SB Type) made of Bi-component fiber

1. PROLOGUE

The FIBER ROD made by ASAHI FIBER INDUSTRY CO.,LTD. is made from thermal bonded fiber by heating, and fibers are bonded at points of intersection. There are three main materials which are Polyolefin (SL type), Polyester (EL type) and foamed from slit sheet type non-woven fabric (SB type).

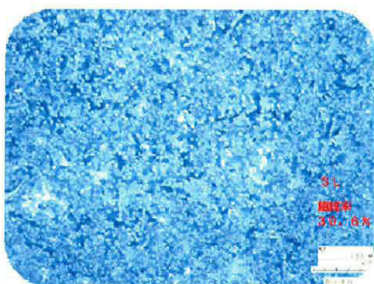
We can correspond with customer's required volume from small lot to large lot by making products from mixing material to foaming goods by using original machine which is designed & manufactured by us. The picture is image of FIBER ROD products.



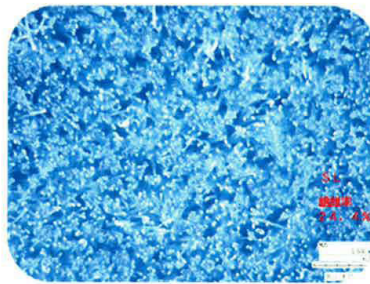
Products of FIBER ROD

2. FIBER ROD CHARACTERISTICS

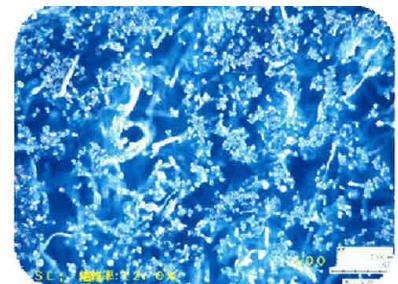
- ① FIBER ROD is molded by material it self without binder. Which material is bi-component fiber of Polyolefin (SL type), Polyester (EL type and SB type).
- ② Since it is binder-less, impurities are not eluted from the fiber rod.
- ③ Either SL type, EL type and SB type has high resistance to chemicals.
- ④ Porosity of FIBER ROD can be adjusted in the range of 50~90% so we can arrange suction time and volume.
- ⑤ The high technology FIBER ROD can be produced by mixing functional fibers like a wicking fiber, an anti-biotic fiber and etc.
- ⑥ Below pictures are cross section photograph of SL type for different porosity.



SL porosity : 60%



SL porosity : 75%



SL porosity : 88%

3. FIBER ROD SPECIFICATIONS

Type	Material	Specifications ※
SL	Bi-components material of polyolefin group	diameter : 2mm~30mm length : 2mm~300mm porosity : 50~80%
EL	Bi-components material of polyester group (EL40, EL70 2type)	diameter : 2mm~30mm length : 2mm~300mm porosity : 50~80%
SB	Sheet type non-woven fabric made from polyester	diameter : 3mm~30mm length : 3mm~300mm porosity : 60~85%

※FIBER ROD can be foamed freely to satisfy customers demand because it is 100% custom made.

4. FIBER ROD CROSS SECTION PHOTOGRAPH

FIBER ROD is basically round pillar shape, but various shapes are available.



Standard round pillar shape



Square shape



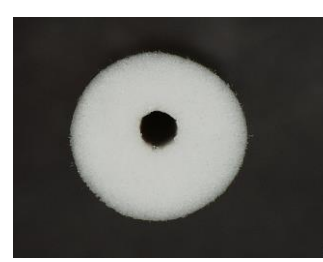
Rectangle round corner both sides



Round pillar shape with groove on one side



Standard round pillar shape



Cylindrical shape

5. FIBER ROD PURPOSE

• Ink server for pens : permanent marker, water-base marker, board marker
• Air freshener wick : for rooms, for toilets, for car interior
• Wick : insect repellent, germicide, electrolyzed water, lubricants
• Plant factory : culture medium
• Parts for printer ink tank
• Wick for various type of liquid
• Parts for medical : Hemostasis pad, saliva examination, urine analysis, blood test
• Pre-filter for water purifiers
• Cartridge for high speed filtration: pre filter for pure water, filter for drainage

FIBER ROD application example



Ink server : suction core for marker



Wick for air freshener



Parts for medical use
(Hemostasis pad)



Water culture medium

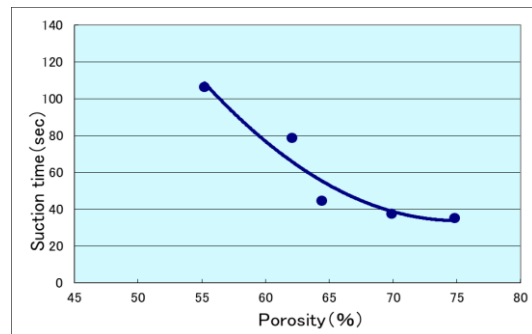
6. FIBER ROD PERFORMANCE

For the evaluation of FIBER ROD, checking outer diameter, length and porosity is important of course, but suction time of liquid, hardness and heat resistance are most important.

i) FIBER ROD: Relationship between porosity and suction time for SL type

This is the relationship of suction time and porosity of SL type (diameter : 5mm, length : 65 mm) as porosity is set for the parameter.

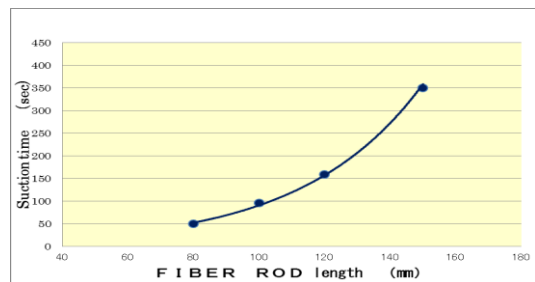
Suction time tends to be shorter as the porosity is higher.



ii) FIBER ROD: Relationship between length and suction time for EL type

This is the relationship of suction time and length of EL type (diameter : 4.5mm, porosity : 70.1%)

Suction time tends to be longer as the length is longer.

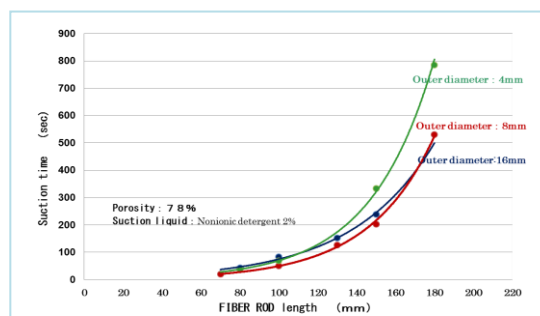


iii) FIBER ROD: Relationship between length and suction time for SB type

This is the relationship of suction time and length of EL type (diameter : 4mm, 8mm, 16mm, porosity : 78%)

Suction liquid is Nonionic detergent 2% solution

Suction time tends to be longer as the length is longer or the outer diameter is smaller.



iv) Heat resistance of FIBER ROD to the hot water

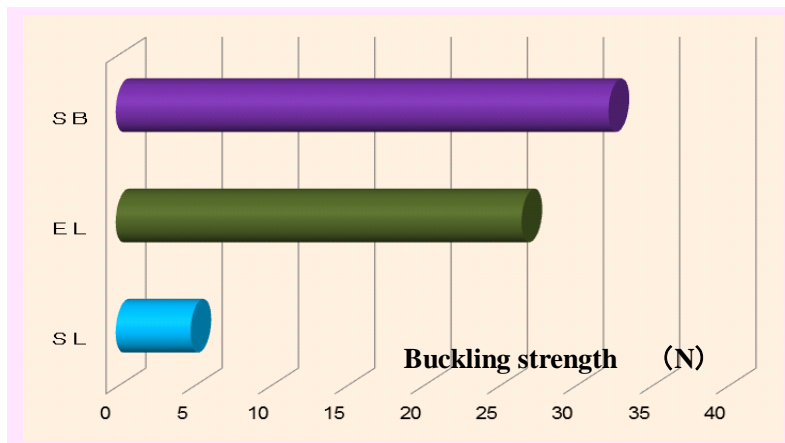
Below is the result for the evaluation of heat resistance for SL type, EL type and SB type FIBER ROD by dipping them in to the hot water purified by Ion exchange resin and checking expansion rate of outer diameter.

Type	Dipping condition		Heat resistance Performance
	Liquid temperature	Dipping time	
SL	2 5 °C	6 months	◎
	8 0 °C	24 hours	◎
	8 5 °C	1.5 hours	×
EL70 Heat resistance type	8 0 °C	24 hours	◎
	8 5 °C	1.5 hours	◎
	8 5 °C	2.0 hours	◎
EL40 Standard type	Room temp.	15 days	◎
	8 0 °C	24 hours	×
	8 5 °C	1.5 hours	×
SB	8 0 °C	24 hours	◎

◎ : Excellent × : Very poor

7. FIBER ROD BUCKLING STRENGTH

Below is the result of measuring the pressure by push-pull scale when FIBER ROD is broken by being pressed from both ends. With porosity as 70%, buckling strength is SB > EL > SL



Conditions :

- FIBER ROD diameter : 4.5mmΦ
- FIBER ROD length : 100mm
- Porosity : 70%

8. FIBER ROD APPLICATION

All FIBER ROD is 100% custom made, so please evaluate our prototype which we will make as the concluded specifications of purpose, diameter, length, porosity and etc. with having consultation by customer.

After the evaluation, we will start mass-production.