



MSF-US SERIES STERILE FILTERS

Manufacturing Forward





Mikropor began its journey in 1987 with a passion to create “Tomorrow’s Technology” and has become one of the leading manufacturers of atmospheric air filtration solutions and compressed air treatment systems for a variety of industries.

By closely following the latest developments in technology, Mikropor’s “Best in Class” products and solutions are appreciated by customers in more than 100 countries.

The company’s sustainable growth has been provided by its passion for innovation and commitment to quality, as well as its dedication to technology. Mikropor is an environmentally conscious company that values people, while developing products that extend the needs and expectations of customers.

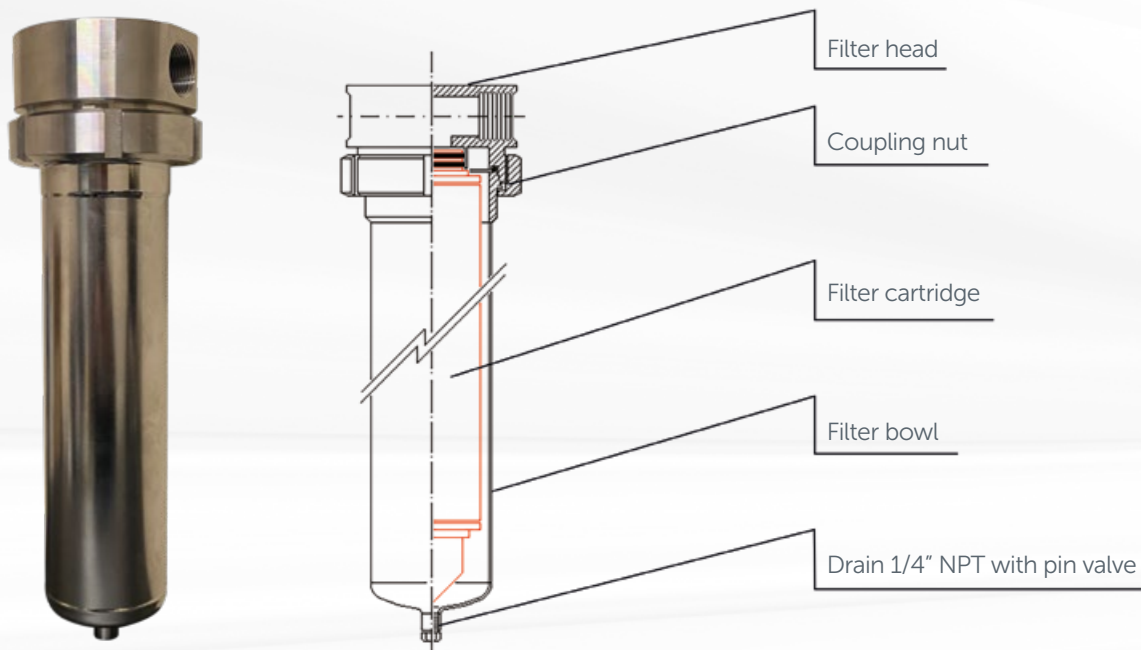
With this mission, Mikropor continues to become one of the most recognized brands in the world by expanding its global penetration in the field of technological filtration and contributes to a healthier planet.

www.mikroporamerica.com

MSF-US SERIES STERILE FILTERS

Mikropor Sterile Filter Housing

MSF is a high-quality filter housing to provide safety and reliability in desired conditions. As the coupling body-bowl is designed to prevent unscrewing when in pressure, they are suitable in compressed air and gases.



Reference Conditions

REFERENCE CONDITIONS FOR ALL MSF MODELS*

Design Pressure (@140°F)	290 psig
Working Pressure Condition	100/200 psig
Working Temperature Condition	70°F

**All values preferred to the directive 2014/68/EU*

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Mikropor PTFE Sterile Element

The MSF PTFE Membrane Filter offers 99.99% absolute filtration efficiency with a naturally hydrophobic PTFE membrane featuring high porosity and flow rate. This filter stands out with its low-pressure drop and long service life, while demonstrating broad chemical compatibility against strong alkalis, acids, and aggressive gases, and maintaining high temperature resistance. The MSF Membrane Series is available in 0.20 µm pore size.

Working Principle:

The purpose of sterile filters in compressed air systems is to prevent the passage of microorganisms in compressed air and gases. These filters consist of a membrane structure with micro-pores. They effectively filter out more than 99.99%. To maintain flow rate and prevent accumulation on the filter surface during filtration, regular inspection and sterilization of the filters are required. Sterile filters are widely used in areas such as pharmaceutical production, biotechnology, food, and beverage production, medical device sterilization, and laboratory applications.



Sterilization

There are two types of sterilization process, both for preventing bacterial contamination by sterilizing filter elements and housings. It ensures filtration efficiency, extends filter lifespan, and maintains sterility in critical industries like food, beverage, and pharmaceuticals. This process guarantees product safety and regulatory compliance through efficient steam sterilization. These sterilization types are stated below including necessary steps.

NOTE: The recommended element replacement period is ≥ 100 cycles sterilization guaranteed.

1. Sterilization-in-Place

The process is introduced step-by-step below and the parameters are in the table below.

- Ensure the filter housing and element are in place
- All system connections except for steam inlet and condensate drain shall be closed
- Filtered steam (min. 14 psig) is supplied
- The required sterilization temperature (250-285°F) is maintained
- Steam for 10-30 minutes, depending on temperature shall be flowing constantly
- The condensate to prevent cold spots shall be drained continuously
- After sterilization process, sterile air or gas to cool the system shall be introduced
- The system integrity shall be checked (any leaks, etc.)
- The filter is now sterile and ready for use

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2. Autoclave

The other sterilization process option is the autoclave. The elements can be sterilized by this process. The process is introduced step-by-step below and the parameters are in the table below.

- The filter element and housing remain in place and steam is used to sterilize the filtration system without the need for removing
- The steam shall be free of rust and other particles
- Steam pressure shall not be allowed to fall below 14 psig or 250°F throughout the sterilization process
- Any air trapped in the housing shall be vented. The condensate shall be drained from the system during sterilization. Discharge the remaining air by loosening the drain on the bottom of the filter using a wrench
- After sterilization pressurize the system with process air or gas up the stream pressure used and allow the system to cool until ready for use
- Gently tighten the drain relief valve by using a wrench as shown below

NOTE: Generally, the only filter element is sterilized in an autoclave, but both the housing and element can be sterilized if removed from the process disassembled and put in the autoclave.

Temperatures	Cycle Times (mins)			
	Sterilization	Cooling	Reheating	Total
250-255°F	30	15	15	60
265-275°F	15	15	15	45
285°F	10	15	15	40

Specifications

Materials	Filter Media	Hydrophobic PTFE Membrane
	Support Layers	Polypropylene
	Micron Rating	0.2 µm
	Inner Core	Reinforced Polypropylene
	Outer Cage	Reinforced Polypropylene
	End Caps	Polypropylene
	Sealing Method	No Adhesives
	O-ring	Silicone
Cartridge Safety	Endotoxins	<0.25 EL/ml
	Extractables	0.03 g/10"

MSF-US SERIES STERILE FILTERS

	100 psig - 70°F (0.2 µm)			
Models (@100psig)	MSF-US-25	MSF-US-85	MSF-US-130	MSF-US-175
Element Models	MSE-40	MSE-140	MSE-220	MSE-300
Max. Flow Rate	25 scfm	85 scfm	130 scfm	175 scfm
Pressure Drop	0.8 psig	1.1 psig	0.95 psig	0.9 psig
Filter Body	316SS Stainless Steel			
Design Pressure	290 psig at 140°F			
IN/OUT Connections	1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
Gasket Material	Silicone			
Drain	1/4" NPT with pin valve			

	200 psig - 70°F (0.2 µm)			
Models (@200psig)	MSF-US-25	MSF-US-85	MSF-US-130	MSF-US-175
Element Models	MSE-40	MSE-140	MSE-220	MSE-300
Max. Flow Rate	45 scfm	150 scfm	240 scfm	330 scfm
Pressure Drop	1.4 psig	1.7 psig	1.55 psig	1.5 psig
Filter Body	316SS Stainless Steel			
Design Pressure	290 psig at 140°F			
IN/OUT Connections	1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
Gasket Material	Silicone			
Drain	1/4" NPT with pin valve			

* For other connection types such as Clamps or Flange connections, please consult Mikropor technical team.

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Main Applications

- Various process filtrations
- Compressed air and gases filtration
- Sterile compressed air and gas filtration
- Food and beverage production
- Pharmaceutical production
- Biotechnology
- Medical device sterilization
- Laboratory applications
- Any need in sterile filtration application

Features and Benefits



Hydrophobic PTFE Membrane with superior porosity



Filtration efficiency $\geq 99.99\%$



Low pressure drop



Long service life



Wide chemical compatibility, resistant to strong gases and solvents



High temperature performance



Specifically designed to ensure sterilization



Filter head offers a smooth surface preventing bacteria growth



Heavy duty construction for housing



Filter bowl with minimum seams



Four different cartridge lengths to a maximum of 3100 in² of filter area



The head-bowl coupling uses a threaded round nut for secure fastening under pressure, ensuring greater reliability than clamped systems

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