

# Installation and Use Instructions For Prewet Cartridge and Disposable Filters



■ For QuickChange® non-dewetting and other prewet hydrophobic Teflon® filter membranes



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## Section 1: Applications

QuickChange non-dewetting and other prewet hydrophobic Teflon membrane filters provide excellent filtration of aqueous based chemicals used in semiconductor wet etching and cleaning applications. These filters are shipped water-wet and require no IPA prewetting procedures. Without an IPA prewetting requirement, these filters prevent alcohol/chemical interaction, avoid potential sources of contamination, and eliminate the cost and inconvenience of hazardous waste disposal.

### Applications compatible with Prewet Teflon filters

Consult Mykrolis Applications Specialists with any questions.

Acids	Mixed Acids and Bases
Acetic Acid (glacial)	HCl + H <sub>2</sub> O <sub>2</sub>
Cerium Ammonium Nitrate	HF + acetic acid + HNO <sub>3</sub>
HCl Hydrochloric Acid	HF + H <sub>3</sub> PO <sub>4</sub> + H <sub>2</sub> O
HF Hydrofluoric Acid	HF + NH <sub>4</sub> buffered oxide etch
HNO <sub>3</sub> Nitric Acid (fuming)*	HNO <sub>3</sub> + HF + H <sub>2</sub> O (50:1:20)
HNO <sub>3</sub> Nitric Acid	H <sub>3</sub> PO <sub>4</sub> + HNO <sub>3</sub> + acetic acid + H <sub>2</sub> O
H <sub>2</sub> O <sub>2</sub> Hydrogen Peroxide	H <sub>2</sub> SO <sub>4</sub> + H <sub>2</sub> O <sub>2</sub>
H <sub>3</sub> PO <sub>4</sub> Phosphoric Acid*	KOH + IPA
H <sub>2</sub> SO <sub>4</sub> Sulfuric Acid	NH <sub>4</sub> + H <sub>2</sub> O <sub>2</sub>
Bases	
KOH Potassium Hydroxide	
NaOH Sodium Hydroxide	
NH <sub>4</sub> OH Ammonium Hydroxide	

## Section 2: Safety

### **WARNING**

#### **CHEMICAL HAZARDS**

DOUBLE-CONTAINMENT is required when used with toxic and hazardous chemicals. All filter housings, filters, and other pressurized vessels must be double-contained to prevent serious personal injury.



SAFETY CLOTHING, eye protection and safety apparatus appropriate for the liquids in use must be worn during component changeout and start-up. Perform all operations with standard liquid handling procedures in accordance with all local codes for safety and

### **DANGER**

#### **EXPLOSION HAZARD**

All-polymeric components are not intended for use with flammable solvents. Due to the potential of static discharge, stainless steel housings are recommended for flammable solvents.



**Step 1: Unpack, drain and install the filter**

Components are wrapped in multiple bags for cleanroom use. Handle components according to the installation facility's cleanroom procedures.

**Note: Minimize handling and use Nitrile gloves to ensure product cleanliness during installation of the prewet filters.**

**Chemlock® Cartridge Filters (installation in a Chemlock Housing):**

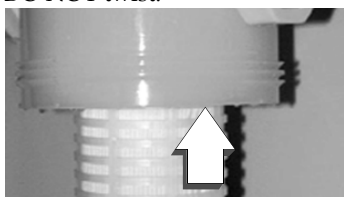
- Carefully slice the top of the bag then invert the cartridge (still in the bag) to drain all the Ultra-pure DI water from the cartridge and cartridge core.
- Carefully cut the bottom off the bag.
- To ensure product cleanliness, hold the cartridge by the bag and insert the filter into the bowl.



- Lock the cartridge in place by turning the cartridge clockwise. Attach and tighten the bowl to the housing head. Note: Refer to the Chemlock housing manual for additional installation details

**Standard Cartridge Filters (Installation in a standard housing, i.e., Chemgard™):**

- Carefully slice the top of the bag then invert the cartridge (still in the bag) to drain all the Ultra-pure DI water from the cartridge and cartridge core.
- To ensure product cleanliness, hold the cartridge by the bag and insert the filter into the housing head.
- Push straight up to avoid damage to the O-ring and seal. DO NOT twist.



- Attach and tighten the bowl to the housing head.

**Disposable filters:**

- The filter is shipped full of ultra-pure DI water. Move the filter to an appropriate location and, if provided, remove shipping caps and place them in a safe place. They can be used at a later date for removal of the filter.
- Drain all the Ultra-pure water from the filter.
- Determine the Filter Orientation: The arrow on the housing indicates the direction of flow and the position of the Inlet and Outlet.

**CAUTION** ⚠  
DO NOT let the filter dry out.

**Vent**

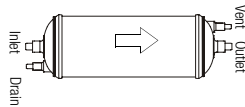
The vent is always on the top. The vent:

- allows gas or air to be removed from the housing during operation, initial wetting, and when changing chemicals
- facilitates the draining of the housing

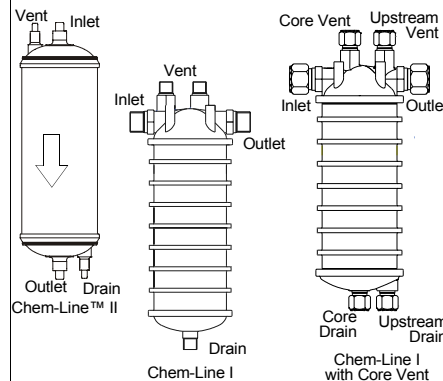
**Drain**

The drain facilitates the drainage of chemicals when changing chemicals in the bath or replacing the filter.

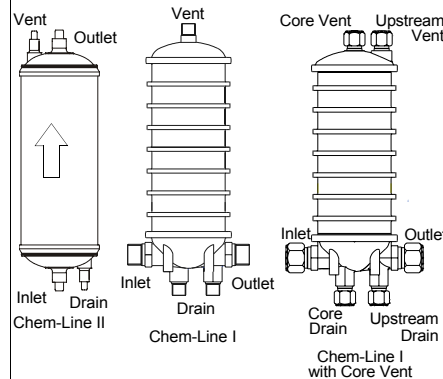
**Horizontal:** Efficient venting of gases by connecting upper 1/4" fitting to vent and lower fitting to drain.



**Vertical Top Feed:** Cartridge core drains more easily when removing it from service.



**Vertical Bottom Feed:** Gas can be flushed from the core of the filter cartridge more easily.



**Step 2: Connect fittings**

- Connect the inlet, outlet, vent, and drain fittings. Use appropriate fittings.
- Vent and Drain Connections:** Rotate the vent to the top-most position and the drain to the lowest position.

If the filter is being used on a recirculated bath, where gas is generated by the chemical (for example, NH<sub>4</sub>F or H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O<sub>2</sub>), always keep the vent partially open and returned to the overflow weir of the bath. This will constantly purge the housing of gas and prevent the filter from being blocked by gas. The correct opening can be achieved with a partially open valve or with a length of 1/16" ID tubing, which limits flow. The valve can be mounted either directly on the housing or remotely.

**CAUTION** ⚠

If the valve is mounted directly on the housing, wear protective clothing when adjusting the valve during system operation. Avoid excessively long or curling tubing, which might interfere with the proper operation of the vent.

- Connect the drain line or cap.

**Note:** The filter housing cannot be fully drained through the feed or the filtrate fittings. The drain must be used to obtain rapid flushing of the filter unit.

A valve is recommended for the drain. Pitch the tubing running from the drain to waste to prevent the entrapment of chemicals. A cap can be used in place of a valve if a safe method of removing the cap to drain the housing is employed.

- Verify that all connections are leak-tight.
- Attach a changeout tag to the feed line adjacent to the filter.

**Step 3: Start the chemical feed****! WARNING**

Wear chemical-resistant clothing, eye protection, and gloves. Take proper precautions when handling hazardous chemicals.

A highly exothermic reaction may result when concentrated acids come in contact with water in the filter.

1. Open the vent valve.
2. Before starting the chemical, please make note of the following safety procedures:

**! WARNING**

Sulfuric acid reacts exothermically with water. Thoroughly drain all water from the filter before exposing the filter to sulfuric acid. If the water is thoroughly drained, a transition can be made directly from water to 96% sulfuric acid. There will be some heating of the fluid, but it should not be excessive.

If water is not drained, increase the sulfuric acid concentration in incremental steps, until the desired level of concentration is reached. Allow the temperature to stabilize after each incremental step, then drain the filter and housing. There will be much more heat generated since the amount of heat is related to the amount of water present. Be careful not to exceed the temperature/pressure rating of the filter and its housing.

3. Start the flow of chemical.
4. Flow the process chemical through the filter until the chemical exits the vent valve along with air bubbles, then close the valve unless the vent is plumbed to the overflow weir in a recirculation bath.

For best results to avoid contamination of the system during installation, fill process chemical into filter then drain chemical to waste. Then proceed to introduce chemical into full system.

**Alternative for outgassing fluids used in recirculation processes:**

Attach tubing from the upstream vent to the recirculation bath's overflow. Leave the vent valve open to direct gas out of the filter housing to prevent filter dewetting.

**! CAUTION !**

When using a remote drain, purge the drain valve during the start of the chemical flow. If necessary, the initial flow of filtered chemical can be directed to the drain to remove residual water from the unit (10-20 liters of chemical is sufficient for most applications).

**Flush hazardous chemicals from the filter before disposal.**

The following recommendations are for aqueous-based chemicals. If possible, the unit should be flushed with water while on the process equipment.

**! WARNING**

The contact of water with some chemicals can result in an exothermic reaction.

**! WARNING**

Because chemicals can diffuse into the Teflon fluoropolymer resin, the filter unit may still contain hazardous chemicals even after flushing.

**! WARNING**

Do not exceed the pressure and temperature rating of the filter device during flushing.

**! WARNING**

Wear chemical-resistant clothing, eye-protection, and gloves. Take proper precautions when handling hazardous chemicals.

1. Relieve chemical pressure. Close valves to assure no chemical flow.
2. Open drain and vent valves. Completely drain chemical from the housing from the outlet side of the filter.
3. If possible, flush the filter with water while installed on process equipment. If it is not possible to flush the filter while on the equipment, remove the filter from the piping and flush it in a flushing stand.

**! WARNING**

Wear chemical-resistant clothing, eye protection, and gloves. Take proper precautions when handling hazardous chemicals.

4. Open the vent and drain lines. Direct them to a chemical drain. Direct the outlet of the filter to drain.
5. Connect the inlet to a water supply of about one gpm. Start the flow of water.
6. After five minutes, close the drain and vent valves. Flush for an additional 15 minutes. If appropriate, check the pH of the filtrate to assure that the chemical has been flushed.
7. Turn off the flow of water. Drain the filter device.
8. Remove the filter from the system. If desired, the filter may be dried under an exhaust hood.
9. Cap the inlet, outlet, vent, and drain fittings.
10. Dispose of the filter in accordance with local regulations.

# General Limited Warranty for Non-Custom Mykrolis Products

## General Limited Warranty For Mykrolis Products

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As used in this General Limited Warranty the term Applicable Warranty Period for the indicated product groups are as follows:

Mykrolis Product Group	Warranty Period	Product Code
Polymeric Membrane Products	1 year from date of shipment	H4, H5, M4, M6
Metal Membrane Products	2 years from date of shipment	T2
	Exceptions: Nickel Membrane Gas Filtration Products Gas Diffuser Products	5 years from date of shipment 5 years from date of shipment
Dispense Products	1 year from date of shipment	H6
Electro-Mechanical Products	1 year from date of shipment	
	Solid Sense® I Pressure Transducer Products Solid Sense® II Pressure Transducer Products IntelliFlow® Mass Flow Control Products Capacitance Diaphragm Gauge Products XacTorr® CDG, CMX45 & CMX100 Products Motor Driven Throttle Valves Motor Driven Throttle Valve Controllers	5 years from date of shipment 2 years from date of shipment 5 years from date of shipment 2 years from date of shipment 2 years from date of shipment 2 years from date of shipment 2 years from date of shipment 2 years from date of shipment
Software Products	1 year from date of shipment	
Other Products	1 year from date of shipment	

**Date & Version of Mykrolis General Limited Warranty**  
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