



Efficiently removes byproducts

Metal Etch Trap

Features & Benefits

- Increases throughput and uptime
- Decreases maintenance frequency and reduces maintenance time
- Eliminates the use of heaters after the trap
- Protects vacuum pump and valves
- Rapid return on investment
- Low cost of ownership
- High flow conductance
- Compact, light weight design
- Available in sizes for most metal etch lines

Applications

Aluminum etch systems use chlorine and boron trichloride gases to etch aluminum on wafer surfaces. The byproducts of the aluminum etch process include aluminum chloride that condenses in the downstream pump line and clogs vacuum exhaust lines. This reduces pumping speed and causes process variability and yield loss. The downtime required for periodic cleaning reduces throughput. In addition, solid boric oxide and boric acid are formed by the reaction of BCl_3 with water vapor and oxygen in the exhaust line of the dry pump, clogging the entrance to the scrubber.

When a dry chemisorption scrubber is used, solid aluminum chloride often clogs its entrance, and contaminates its chemical adsorbent. Installation of a metal etch trap can extend the scrubber service life significantly.

The Metal Etch Trap, when installed as a component in an Effluent Management Subsystem™, efficiently traps condensable effluents that are generated by aluminum etch processes without reducing pumping speed. High trapping capacity means a longer time between maintenance. Maintenance is simplified by

replacing a single disposable trapping element rather than cleaning many feet of vacuum line. Low cost of ownership is achieved by not running heated lines all the way to the scrubber.

Recommended Installation

An efficient metal etch Effluent Management Subsystem consists of the Metal Etch Trap, Series 49 heaters, a heated valve, and a Virtual Wall™.

The Metal Etch Trap operates most efficiently when it is installed in the foreline between the turbo pump and the dry pump with a line pressure above 100 mTorr. The Metal Etch Trap operates in conjunction with a heated foreline operating at 105°C which prevents condensation of the exhaust byproducts. The heating of this line must be very uniform, with no cold spots.

The Metal Etch Trap is installed immediately downstream of the heated line no more than 5 to 6 feet from the process chamber. The ability to trap AlCl_3 close to the process chamber rather than having to run heated lines 20-30 feet saves a significant amount of money on installation and ongoing maintenance.

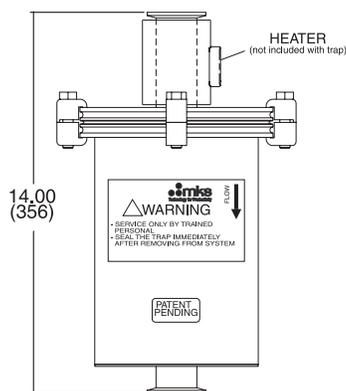
Installing a Virtual Wall at the entrance to the scrubber prevents the reaction between BCl_3 and water vapor that forms solid byproducts. The Virtual Wall provides a heated nitrogen barrier preventing water vapor from rising out of the wet scrubber into the exhaust line. This prevents the surface reactions that form the solid deposits that clog the entrance to the scrubber.

For more information, please contact a process solutions engineer at 303-449-9861, or visit our website at www.mksinst.com.

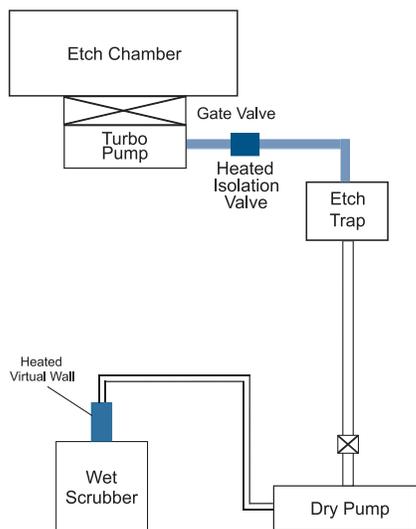


Specifications and Ordering Information

Dimensions



Sample Installation



Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Specifications

Capacity	3 lbs. AlCl_3
Materials Exposed to Process	Stainless Steel, Viton®
Flow Conductance (Viscous Flow Region)	p = pressure in mTorr $c = 1355 + 5.73p$
Pressure Drop Across Trap	Q = gas flow rate in sccm p = pressure in mTorr $\Delta p = Q/c$
Typical Dry Weight	13 lbs (5.9 kg)

Recommended Process Parameters

Process Pressure	10-100 mTorr
Foreline Pressure	approximately 100 mTorr
Gas Flow Rate	200-500 sccm
Major Byproduct	AlCl_3

Ordering Information

Metal Etch Traps

Part Number	Description
63-0506211	ISO-KF NW 50 Inline 6" body
63-0406211	ISO-KF NW 40 Inline 6" body
63-0508211	ISO-KF NW 50 Inline 8" body

Entry Port Heaters, 105°C

Consult Factory

Replacement Parts

Part Number	Description
100011295	Trap Element
100760516	Viton® Seal



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