LTFE - High Temperature Filter Etch Bath

Built For 180°C Aggressive Chemistry

Simple Self Contained System

Capture Complete Fluoropolymer Advantage

- *Only commercially proven system to match aggressive chemistry to 180°C.*
- *Smooth surge-less flow from integral filter & centrifugal pump.*
- *Wetted Components of TFE & PFA.*

High Temperature Filter Etch Bath
With Manual Lid or Pneumatic Slide Opening

PROCESS TECHNOLOGY

LTFE - High Temperature Filter Etch Bath

Engineering Specifications

Chemical Containment: All plumbing connections, filters and pumps are self contained in the bath. Provides for additional fail safe containment.

Clean Up: Easy clean between process change outs. Flush the system with DI water. Another is to flush with peroxide. Some sites use H_2SO_4. No scheduled system flush is prescribed.

Etch Rate: Average etch rates in excess of 75 and 85 angstroms per minute have been reported (temperature and chemical concentration dependent).

Maximum Strip Rate Non-uniformity: Reported less than .03 angstroms.

Minimum Selectivity: Greater than 18 to 24:1 (nitride to oxide).

Process Availability: Reported at 95% to 97% availability per month.

DI Water Make Up Control: The Lufran system uses a LTFEC-J MTC process controller to adjust concentrations of DI water. Our system adjusts for boiling and evaporation of the water in the hot phase up to 180° C.

Flow rates are fine tuned per installation and to meet your process requirements. Experience shows an average range of 0 - 200 ml / min.

DI water is introduced to the system by a tube located under the inner weir and is mixed immediately by pump agitation.

Temperature Control: A self tuning PID based microprocessor maintains +/- 1°C. System operations and safety circuits are continuously monitored and displayed on the LTFEC-J process controller.

Filter Life: Current users report filter life span of approximately 3500 - 4500 wafers.

Filter Size: 1 micron filter, has proven to be the most effective size for Nitride applications.

Filter Housing: Made from PTFE. Integral with pump body. Holds 10" Single Open End (SOE) cartridge or stacked filter elements. Integral air bleed standard.

Safety Interlock: Cooling water loss, N_2 purge loss, Internal motor bi-metal thermal fuse, Internal heater thermocouple, bubble style liquid level sensor.

Initial Heat Up: Depending on system size and normal conditions (i.e., proper PID values open lid, etc.) temperature rise is 1.5 - 2.0° C per minute.

30 to 45 minutes to reach 50 particles at .5µm size in H_2SO_4 @120° C.

Tank Assembly:

Cut out: w/ Bezel: 15" x 29" (38 x 74 cm)
w/o Bezel: 12 3/4" x 25 1/4" (33 x 64 cm)

Depth: w/ Bezel: 15 1/2" (39 cm)
w/o Bezel: 12 1/4" (31 cm)

Weir Inside Dimensions: For 1 or 2 Carriers

4" (100mm) carriers: 11" x 7" x 5 1/2" (29 x 18 x 14 cm)

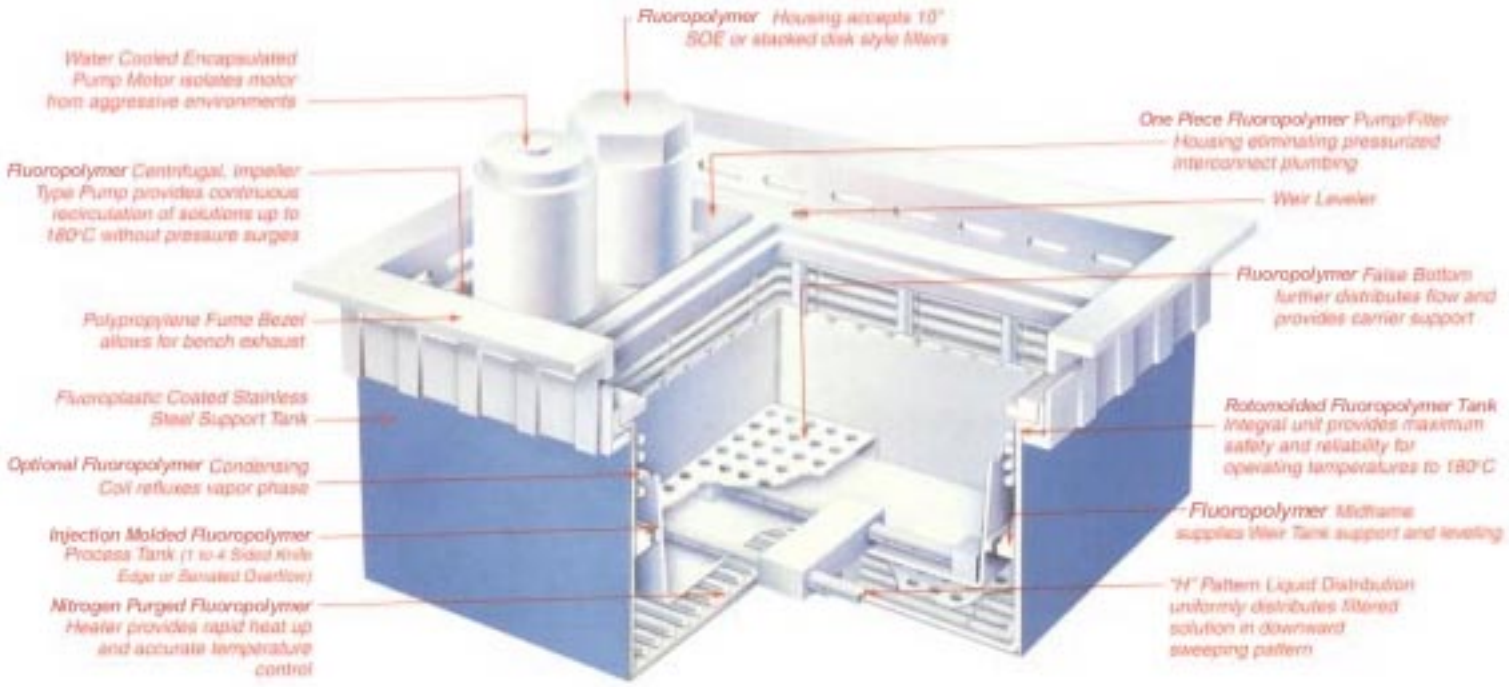
5" (120mm) carriers: 13" x 7" x 6 1/2" (33 x 18 x 17 cm)

6" (150mm) carriers: 15" x 7" x 7 1/2" (38 x 18 x 19 cm)

8" (200mm) carriers: 15 1/2" x 11" x 10 1/4" (39 x 28 x 26 cm)

Facility Requirements

Type	Customer Supply	Used In	Connection Type
Electrical	208 vac, 1 phase with Neutral and Ground 30 amp	Heater, Controls Pump motor	Screw type terminals
Nitrogen	40-60 PSIG (276-414 kPa) 12-17 SCFH (5.7-8.0 LPM)	Heater Purge Motor Seal Purge Bubble Sensor	1/4-inch (.6 cm) Compression
DI Water	30-60 PSIG (207-414 kPa) 10-15 GPH (38-57 LPH) @ 45 PSI (310 kPa)	Condensing	1/4-inch (.6 cm) Compression
	30-60 PSIG (207-414 kPa) Approx. 5 GPH (19 LPH) @ 45 PSI (310 kPa)	DI Make-up	1/4-inch (.6 cm) Compression
	30-60 PSIG (207-414 kPa) Approx. 5 GPH (19 LPH) @ 45 PSI (310 kPa)	Motor Cooling	1/4-inch (.6 cm) Compression
Drains	Top Aspiration	Provision for a 1/2 inch (1.3 cm) Aspirator wand	
Bottom Drain avail.	Customer Supplied Drain Valve		3/4 (1.9 cm) FNPT



LUFRAN

Unique design of LTFE means performance for your process.

Pump & Motor

Engineering Specifications

Motor

Totally Enclosed: Water cooled, permanent shaded pole, grounded motor, purged labyrinth seal. Exclusive Lufran design.

External portion of the motor is protected by a shroud of Fluoropolymer and PVC.

Top portion of the motor, cap, motor cooling fittings and the motor power cord are all O-ring sealed for vapor protection.

Continuous service: Compact and totally encapsulated motor is isolated from aggressive atmosphere. While the motor housing design meets construction parameters as described for NEC Class 1, Division 1, purged electric motor, it is not formally listed. Proprietary N_2 bearing purge extends life. Water cooling, and purge patented (4,158,764 - 4,390,776 - 4,553,024)

Maintenance: Usual motor PM cycle is from 6 to 8 months. Two motors are supplied with new LTFE units for rotation through preventative maintenance

Constant cooling water supply and Nitrogen purge flow will enhance and maintain useful life. Do Not directly immerse motor in media.

Power: 1/2 HP

Voltage: 120 vac 60 hz
110 vac 50 hz

RPM: 3400 RPM @ 60 hz
2800 RPM @ 50 hz

Type: Shaded Pole

Case: 316 Stainless with cooling channel enclosed in Fluoropolymer & PVC.

Connection: Cooling lines 1/8" stainless compression and 1/4" Fluoropolymer for N_2.

Amp Draw: 9 amp in rush
7 amp maximum

Pump

Type: Centrifugal

Impeller & Shaft Sleeve: Solid

Max Delivery Pressure: Up to 15 psi (103 kPa)

Max Flow: Up to 18 GPM (68 LPM) with DI water and without filter

Temperatures: Up to 180°C

Exclusive Lufran Pump, Motor and Filter in one assembly

PROCESS TECHNOLOGY

7010 Lindsay Drive • P.O. Box 660 • Mentor, Ohio 44060
Phone: 440-946-9500 • FAX: 440-974-9561 • U.S./Canada: 800-621-1998
Website: www.process-technology.com • E-mail: info@process-technology.com