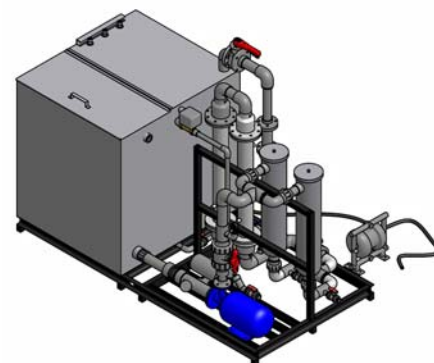


# TruFlux™ De-greasing UF Machine

## PRODUCT DATA SHEET

Industrial companies today face economic and environmental challenges: restrictions on waste water quantity and quality, increasing disposal costs, higher energy costs, water usage restrictions, and chemical cost increases. The TruFlux™ De-greasing Ultrafilter (UF) Machine is one 'green' initiative that addresses these issues.

Here is how it works: used alkaline cleaner-stage solution is transferred to the holding/concentration tank in the TruFlux De-greasing UF machine where it is separated into two streams. One stream contains the



waters and un-spent surfactants that are able to pass through the small pores of the Corning Ceramic UF Element. These are then returned to the alkaline cleaner stage. The other stream contains the dirt, spent surfactant, oils, and greases that cannot pass through the pores. These are concentrated in the holding tank. Eventually the concentration of oils & greases, spent surfactant and dirt in the holding tank will reach a level where the process is stopped. The sludge is transferred out of the concentration tank to a drum or tote for possible sale (to someone who can use the thermal energy) or disposal.

The Ceramic UF Element is an innovation of Corning, which has a major share of the honeycomb ceramic automotive catalytic converter market. Corning's line of ceramic UF Elements for liquid filtration are well-suited for the elevated temperature and high pH associated with alkaline cleaner baths. UFS Corporation, with more than 30 years of experience in E-coat paint UF systems, has teamed with Corning to create a UF machine for this application. Further information on estimated cost savings, may be found at [www.ufsc.com](http://www.ufsc.com). An Excel file named 'Alkaline Cleaner Stage Annual Tank Dump Expense Estimator.xls' is available for download.

### Features

- Ceramic UF membrane and ceramic honeycomb core are more durable than PAN polymer membranes that have been used in the past.
- Ceramic honeycomb UF Elements available in 0.45 and 0.2 micron ratings. Smaller opening sizes are available for other applications.
- UF Elements are available in three different OD's: 142 mm (5.66 in), 89 mm (3.5 in), and 27 mm (1 in).
- Specify one or two UF Elements (in series) based upon permeate or tank turn-over demand.
- Horizontal 304 stainless steel UF feed, make-up and sludge pumps.
- Plastic snap-ring type filter bags or 20" long molded filter cartridge 100 micron duplex pre-filters and a 304 stainless steel sloped-bottom concentration tank.
- PLC process display, with color touch screen, and motor and process control panel.
- Process fluid magnetic flow meter, electronic permeate flow meters, pressure sensors, and two RTD temperature sensors.
- 304 stainless steel piping designed for up to 82 °C (180 °F) operation.

### Benefits

- Operates at higher temperature than PAN polymer UF membranes and less expensive than sintered metal UF elements.
- Recycles un-spent surfactants and water while concentrating oils, greases, and dirt particles in a separate tank.
- Promotes consistent part cleanliness by keeping the alkaline bath free of high levels of oil and dirt particles.
- Reduces energy consumption due to fewer tank dumps.
- To double permeate, a second ceramic UF Element can be added for a small incremental amount (in series mode) without any change to the UF feed pump or concentration tank.
- Since less volume of waste water will be discharged, tank dump schedules can be reduced; thus saving on clean-out labor, replenishment chemicals, re-heating cold water, water, and discharge hauling costs.
- Standard cleaning is performed each time the concentration tank is refilled with fresh make-up.
- With proper recommended care, the life of the Corning Ceramic UF Element is estimated to be three to five times longer than a polymer UF Element.
- Concentration tank also serves as cleaning tank.

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## Ceramic UF Membrane Cleaning

UF membranes can be fabricated from many materials: PVDF; metals such as sintered steel; or ceramic membranes, which have been widely used for over 35 years in many industrial processes.

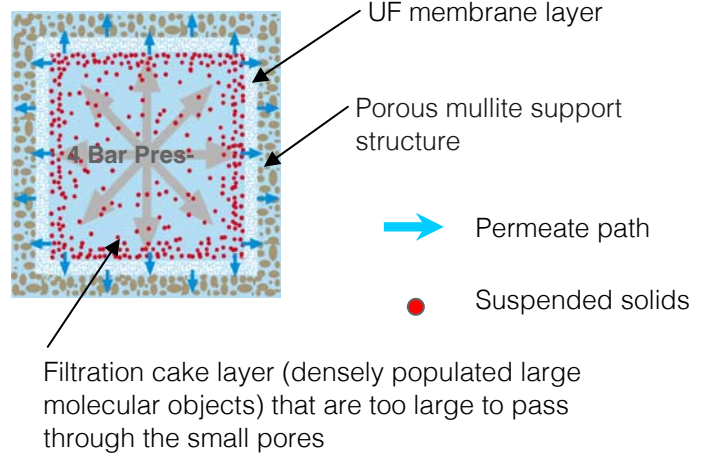
The ceramic membrane is more durable than a plastic polymer type because its membrane structure is a ceramic material cast over a ceramic honey-comb core. In comparison, the polymer membrane is a thin plastic film cast over a paper-like sheet material.

Because of the high strength of ceramic membrane, it is possible to close the permeate valve while process fluid is being pumped through the Element. This is not recommended with a polymer type UF Element since any high pressure on the permeate ('paper') side of the polymer membrane can cause the plastic UF membrane film to delaminate and create a leak point.

The standard cleaning regimen is performed after the concentration tank has been dumped and the Element has a significant gel layer on it. While the permeate valve is in the closed (or OFF) position, fresh make-up is added to the concentration tank and circulated for as long as 30 minutes. No permeate is produced during this step while the face of the ceramic Element is being 'scrubbed' by the flow of process fluid.

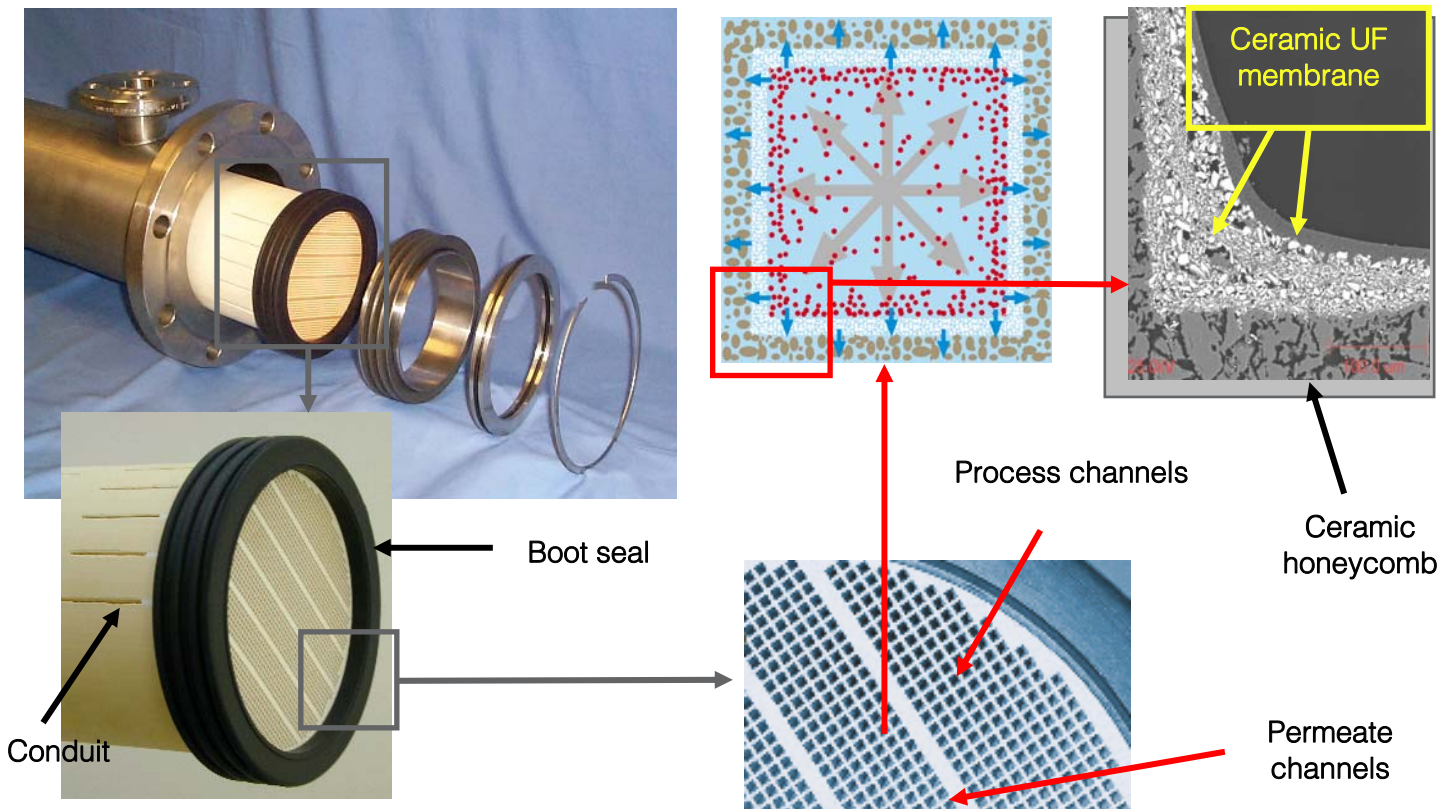
The permeate valve is re-opened and the flow of permeate can be re-started. In the event the permeate flow is lower than expected, a general chemical cleaning can be performed by using the concentration tank as the cleaning tank. In this case, the permeate is redirected back to the concentration tank and the fresh make-up pump is turned off. The cleaner chemicals are sent to drain for disposal.

## Typical cross-section of a Corning Ceramic UF Element Process Fluid Flow Channel



## Machine Requirements

- Suitable location near the alkaline cleaner tank. Usually this is inside the containment area.
- Space for sludge removal via tote or drums should be close by as well.
- 460 VAC 3 phase power for process fluid pump.
- 110 VAC 1 phase (20 amp circuit) for control panel .



Typical disassembly of Corning Ceramic UF Element showing details of the flow channels.