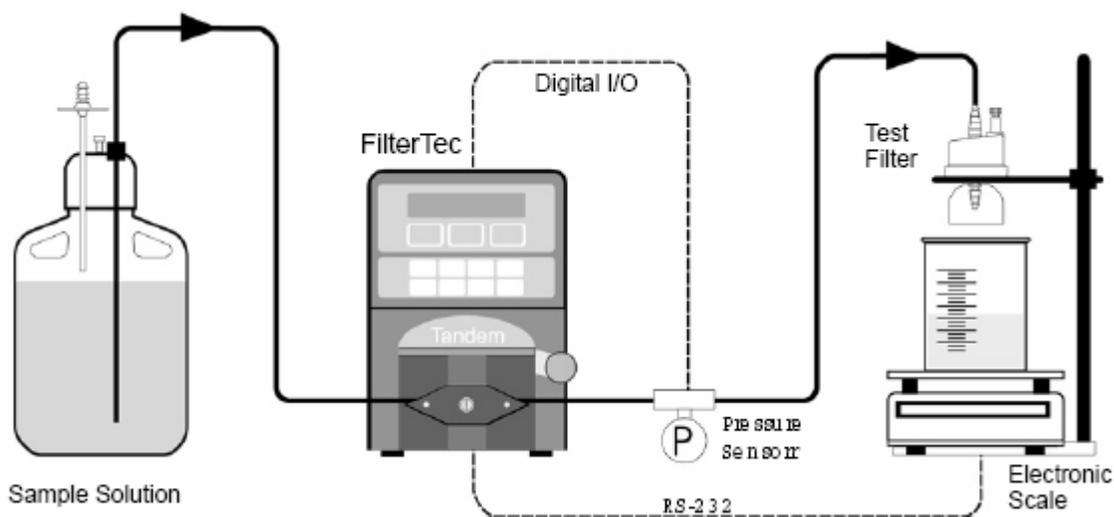


Filter Size Determination Using the “Vmax” Method with the FilterTec

SUMMARY:

Filter capacity measurements are a necessary requirement for any filtration scale-up. The sample solution under study is filtered through a small test filtration device at constant pressure, typically between 10–20 psi. The cumulative solution weight (or volume) exiting the dead-end filtration device is recorded as a function of time. If a linear plot of t/w versus t is obtained, where t represents time and w is the cumulative solution weight, a gradual “pore-plugging” model can be assumed. **Vmax** is the maximum volume of fluid that will pass through the filter before it is completely plugged. **Vmax** is determined by taking the inverse of the slope of plot t/w versus t .



FEATURES:

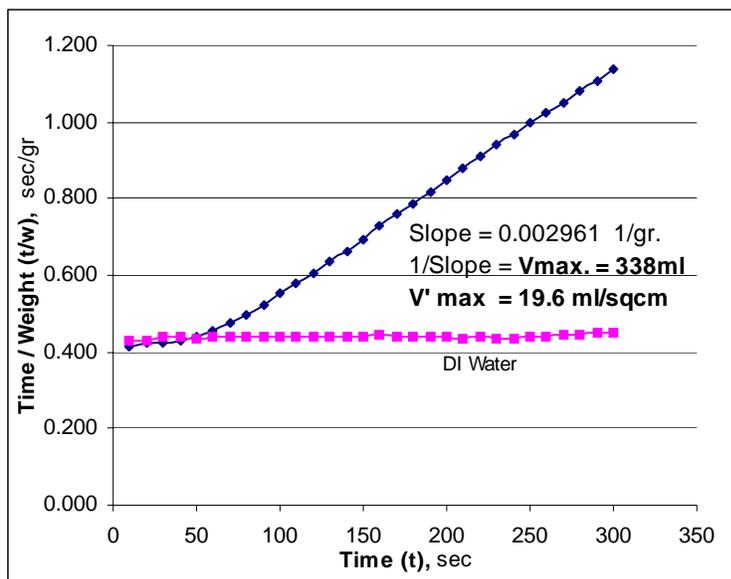
The FilterTec Smart Pump is ideally suited for generating and collecting of filtration data. Set up the FilterTec filtration system as shown in the line drawing above. Using the Manual Mode, first prime the pump tubing and filtration device at low pump speed. In the Constant Pressure Mode of the FilterTec, set the operating pressure between 10 and 20psi. The FilterTec will maintain the selected backpressure throughout the filtration test run by modulating the pump output. In Setup: Printer select “Print Time” 00:10 (10seconds). Connect an electronic balance (e.g. Ohaus “Explorer”) to the FilterTec back panel “Balance” port. In Setup: Scale, select the scale manufacturer, i.e. Ohaus3. By selecting the scale manufacturer, the FilterTec implements the appropriate scale communications parameters.

Documentation:

All data can be printed out or sent at user defined intervals to your PC for archiving via HyperTerminal, or directly into a custom spreadsheet using SciLog’s SciDoc Documentation Package.

In preparing the test filtration device, the test filter must be properly oriented and wetted with distilled water before closing the filter holder. Note: Teflon filters should be wetted with alcohol (IPA). It is important to expel all air bubbles from the device before initiating a filtration test run. Any remaining air bubbles will falsify the test results. For this reason select a filter holder with an integral air vent for easy removal of air bubbles.

DATA and GRAPH:



Time = t	Weight = w	t/w = sec/gr
1	24	0.416
30	71	0.423
50	113	0.442
70	143	0.477
90	167	0.525
110	184	0.581
130	205	0.634
150	216	0.694
170	224	0.759
210	239	0.879
230	245	0.939
250	251	0.996
270	257	1.051
290	262	1.107
300	264	1.136

The above data were generated using a Sartobran-P Cellulose Acetate Filter Combination, consisting of two, 47mm diameter disks, with porosity 0.45 μ and 0.20 μ respectively. The FilterTec maintained a constant 20psi backpressure while pumping (with #14 Silicone Tubing) a sample solution through the filter combination. The filtrate was collected in a reservoir located on an OHAUS "Adventurer Pro" top-loading scale while the filtrate weight was reported and printed out every ten seconds. Note: For sake of simplicity, the data as shown above is summarized at 20-second intervals.

ORDERING INFORMATION:

SciLog Customer Service: 1-800-955-1993

SciLog P/N: DESCRIPTION:

100-138FILT FilterTec Smart Pump CP120: Includes 160-rpm Motor, 1081 Tandem Peristaltic Pump Head compatible with Masterflex thin-walled pump tubing sizes: #13 (0.5-10ml/min), #14 (2-35 ml/min), #16 (6 -129 ml/min), #25 (12-283 ml/min), #17 (19-405 ml/min), #18 (25-554 ml/min). Also includes three (3) disposable pressure sensors, and a fittings kit.

The FilterTec has two Serial Ports, one RS-232 port is used for hook-up with an electronic scale, a second RS-232 port allows hook-up to a printer.

100- 8101 Ohaus Top-Loading Scale, "Adventurer Pro": Recommended for quantitative filter characterization and filter scale-up projects. 8100 gram capacity 0.1 gram readability, larger capacity scale models are available, (contact SciLog), includes RS-232 communication cable (P/N: 080-067PGS) as well as setup and testing with FilterTec prior to shipment.