Water Management Technologies, Inc

Hydrotech Test Tube

Simulation of Drum and/or Discfilter Operation

The Hydrotech Test Tube provides a simple, quick test of filtration capacity and efficiency. Fully portable, it fits easily in any standard automobile and is lightweight and easy to use. Filter disks are easily changed to accommodate testing a variety of filter elements.

Water Management Technologies Inc., P.O. Box 66125, Baton Rouge, LA 70896 USA
Phone (225)755-0026 * Fax (225)755-0995* Web site: www.W-M-T.com * email: info@w-m-t.com

The Test Tube

The test tube is made of PEH plastic and measures approximately 1 meter in length. The round test tube filter plates have a diameter of 0.075 m. The tube comes with a supply of disks with various opening sizes.

Test Tube Results

1. Filter area required: By measuring the time it takes for a specified amount of unfiltered water to flow through the filter cloth and into the test tube, the capacity of the test tube in liters per second can be calculated. Since the area of the filter element on the test tube is known, the capacity per m^2 of the filter area ($l/s/m^2$) is easily determined. The filter area required for a particular application can then be determined. To find the filter area of a specific model, refer to the manufacturer's technical specifications.

2. Purification efficiency is calculated by comparing the content of the "dirt" in the filtered and unfiltered water. The composition of suspended solids can be determined by laboratory analysis.

3. Drum rotation speed is determined by the time it takes the filter element on the test tube to get blocked.

4. Capacity determinations reached using the above methods should be considered guidelines only, given the small area of the test tube disk. When filtering very polluted water or in situations with changing conditions it may be necessary to use a test filter to determine the correct full size filter for your particular application.

To Perform The Test

Choose a test site that is representative of the proposed Drumfilter or Discfilter installation. Where possible, test for a worst case situation. It may be necessary to visit the site more than once to ensure representative testing.

Water depth at the site should be about 70 cm to provide the required pressure on the disk. If that is not possible testing may be performed in barrel carefully filled with water from the test site.

To simulate the function of the Drumfilter the test tube should be submerged 200 mm under the surface. The rotation of the Drumfilter is simulated by immersing the test tube for a set time. For example if the Drumfilter rotates at 3 revolutions per minute, any given part of the filter will be immersed for 10 seconds three times per minute. Therefore, if the test tube disk is immersed for 10 seconds, that corresponds to 3 revolutions per minute.

Immersion Time	5 sec.	10 sec.	15 sec.	20 sec.
r.p.m.	6*	3	2	1.5

*Only the HDF501 is operated at 6 r.p.m. Maximum rotation speeds for other sizes is 3 r.p.m. Drumfilters normally operate at between 1.5 - 6 r.p.m. If high loadings are present in the water, capacity can be increased by increasing the rotation speed.

Testing Schedule		1	2	3	4		6
Disc, microns							
Immersion Time							
Filtrate (ml)	1						
Filtrate (ml)	2						
Filtrate (ml)	3						
Average (ml)							

At least three tests - preferably five - with each disk are required to correctly calculate the average filtration capacity.

Calculation of Capacity

Example: Outlet from W.W.T.P. at a food processing industry with a total outlet of 27.81/sec =100m^3/h. Testing with a variety of filter elements shows good retention of sludge on the 23 micron disk. Filtrate and unfiltered water should be analyzed to indicate removal efficiency. Assume that the average of filtrate through the 23 micron disk is 500 ml 0.51 in ten seconds.

Filter area of disk (d = 7.5 cm) 0.0044 m^2
Flow: 0.5 1/0.0044 m^2 = 113 1/m^2 = 113 1/m^2/10 sec.
In 1 sec: 11.3 1/sec

Filter Area of Drum

When high loadings of suspended solids are present in the water the number of tests performed should be increased to ensure optimum results. While the test tube is an excellent guide, it does not replace a real test unit in all cases. If in doubt about your particular situation, please call Water Management Technologies and our technical staff will be happy to assist you.