RWF Task Group on Filters
Straw Ballot
October 1, 2019

Purpose

This straw ballot will revise language relating to turbidity reduction testing.

Background

The method for turbidity testing in Annex B.5 is in need of updating, specifically the turnover rate. The turnover rate has a direct impact on a filter's turbidity performance. It is potentially easier for a filter to pass the turbidity reduction test with a longer turnover time. The current method allows for a 30 minute turnover. NSF has been testing filters with an 8-12 minute turnover rate. We are aware of filters that would potentially pass with a longer turnover time. It is important to narrow down the turnover rate window as a filter can pass or fail under the same test method.

This draft language was discussed in two meetings of the RWF ad hoc on Turbidity Reduction, and the draft language was presented as a straw ballot for the RWF TG on Filters. An r1 straw ballot received 1 negative vote and comments, and an r2 with revisions based on comments received was sent to the Joint Committee for approval. That JC approval ballot received 5 negative comments, and the language was sent back to the RWF ad hoc on Turbidity for further revision. This r3 ballot was drafted in response to those comments.

This straw ballot will last two weeks.

The grey highlighted portions of the language are proposed additions to the language of the standard.
The ~~strikeout~~ portions of the language are proposed deletions to the language of the standard.

An affirmative (yes) vote on this straw ballot means you agree with the revised language as submitted.

A negative (no) vote on this straw ballot means you disagree with the revised language as submitted. A negative vote must include an explanation of why you disagree with the revised draft.

NSF/ANSI 50 - 2017
Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities

2 Definitions

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2.XX high capacity cartridge filter: a cartridge type filter designed for use at filtration rates ≤ 0.375 gpm/ft^2

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Annex B
(normative)

Test methods for the evaluation of filters

NOTE — The test conditions specified in this Annex are not intended to represent recommended field use conditions.

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B.5 Turbidity reduction test

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B.5.4 Turbidity reduction test method

a) Determine the volume of water needed to achieve a turnover ~~rate of no greater than 30 min~~ time according to the equation below when the filter is operated at the maximum design flow rate. Fill the test tank with the required volume of water.

$$\text{Turnover time (minutes)} = \left(\frac{8}{\sqrt{U}} + 8\right), \pm 5\%, \text{ maximum } 30$$

$$\text{Where: U = Filtration Rate, } \left(\frac{gpm}{ft^2}\right) = \frac{\text{Maximum Design Flow Rate } (gpm)}{\text{Effective Filtration Area } (ft^2)}$$

Volume (gallons) = Turnover Time (minutes) × Maximum Design Flow Rate (gpm)

If the prescribed turnover time requires a test volume greater than 10,000 gallons, the turnover time may be shortened to limit the test volume to 10,000 gallons

b) Sample the water in the tank and determine the turbidity level (*TB1*) in NTU. Add a sufficient quantity of silica #140 to obtain a turbidity level (*TB2*) of 45 ± 5 NTU.

c) Install and condition the filter according to the manufacturer's instructions. Operate the filter at the maximum design flow rate.

d) After operating the filter for the time required to filter one tank volume, draw a sample from the filter effluent and measure the turbidity (*TB3*). Repeat for the next four tank volumes.

e) Calculate the turbidity remaining (*TR*) ratio at each tank volume using the following equation:

$$TR = \frac{(TB3 - TB1)}{(TB2 - TB1)}$$

f) If the filter reaches the manufacturers recommended condition for cleaning prior to completing five tank turnovers, draw a sample from the filter effluent at the time the filter reaches the manufacturer's recommended condition for cleaning, and measure the turbidity (TB3).

g) High capacity cartridge filters only (as defined in section 2): if the TR ratio is > 0.30 after five tank turnover times has elapsed and the filter has not reached the manufacturer's recommended condition for cleaning, a second turbidity reduction test may be performed, steps (a) through (f), without cleaning the filter. The acceptance criteria shall be applied to the TR ratio from this second test.

B.5.5 Acceptance criteria

After the fifth tank volume, the *TR* ratio shall be ≤ 0.30. This is equivalent to a 70% or greater reduction in turbidity.

Filters that reach the manufacturer's recommended condition for cleaning prior to completing five turnovers, shall have TR ratio ≤ 0.30 at the time the filter reaches the manufacturer's recommended condition for cleaning.

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