

STANDARD INFORMATION

Standard: NSF/ANSI/CAN 50

Standard ID: Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities [NSF/ANSI/CAN 50:2020]

Previous Standard ID: Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities [NSF/ANSI/CAN 50:2019]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **July 1, 2023**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Overview of Changes:

- Updates test requirements related to turbidity reduction testing for filters. Changes may require additional testing for **filters**.
- Modifies sample selection relating to low pressure UV lamp testing
- Updates language relating to pump flow rate outputs, which will require additional evaluation or change in labelling for **centrifugal pumps** that provide a flow rate output.
- Adds language regarding crypto reduction claims for filters, will require testing for any **filters** claimed by the manufacturer to reduce *Cryptosporidium parvum*
- Existing requirements for treatment chemicals used in recreational water and facilities consolidated into new section 27 of the standard
- Updates allowances for piping intended for use in water applications with conductivity greater than or equal to 600 ppm to include specific types of stainless steel

Specific details of new/revise requirements are found in table below.

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



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CLAUSE	VERDICT	COMMENT
		<p>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below. New requirements for which additional evaluation or testing may be necessary (depending on applicability to the listed product) are shaded in light gray</p>
4	Info	Swimming pool water contact materials
4.5	Info	Piping materials
4.5.2	Added Allowance	<p>Piping intended for use in water applications with conductivity greater than or equal to 600 ppm <u>aqueous solution of sodium chloride</u> shall be made from one of the following materials:</p> <ul style="list-style-type: none"> — aluminum brass (UNS C68700); — copper-nickel, 10% (UNS C70600); — copper-nickel, 30% (UNS C71500); — nickel-copper alloy – Monel 400 (UNS N04400); <u>— stainless steel Type 304 (passivated) (UNS S30400);</u> <u>— stainless steel Type 316 (passivated) (UNS S 31600);</u> or — thermoplastics or thermoset pipes conforming to the applicable sections of NSF/ANSI 14.
6	Info	Filters
6.1	Info	General
6.1.10		<p><i>New section added;</i></p> <p>Cryptosporidium parvum oocyst reduction</p> <p>A filter manufacturer may make a C. parvum log reduction claim up to a maximum of 1.0 log. A filter claimed by the manufacturer to reduce Cryptosporidium parvum shall be tested in accordance with Annex N-2.9. See standard for details.</p>
7	Info	Centrifugal pumps
7.6	Info	Pump performance curve
7.6.3		<p><i>New clause added;</i></p> <p>For pumps that provide a flow rate output (such as a visual flow rate in LPM/GPM or other manner), the pump may be tested in accordance with the following flow meter requirements of Section 24 of this standard:</p> <ul style="list-style-type: none"> — Section 24.8: Flow rate measurement accuracy; — Section 24.9: Flow metering device testing and accuracy levels; and — Section 24.12: Life testing.



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7.7	Info	Operation and installation instructions
7.7.3		<p><i>New clause added;</i></p> <p>For pumps that provide a flow rate output, the instruction manual shall either state the accuracy level of flow metering performance, (e.g., Level 1 or L1) or shall include the statement:</p> <p>"Displayed flow rate has not been evaluated to the flow meter requirements of NSF/ANSI/CAN 50."</p>
7.9	Info	Data plate
7.9.1		<p>A pump shall have a data plate that is permanent; easy to read; and securely attached, cast, or stamped into the pump at a location readily accessible after installation. The data plate shall contain the following information:</p> <ul style="list-style-type: none"> — manufacturer’s name and contact information (address, phone number, website, or prime supplier); — pump model number; — pump serial number, date code, or specification number; — whether the unit has been evaluated for swimming pools or spas / hot tubs, if not evaluated for both applications; — designation as a self-priming or non-self-priming pump. If the pump is self-priming, the maximum vertical lift height shall be specified; and — <u>if applicable, accuracy level of flow metering performance, (e.g., Level 1 or L1).</u>
15	Info	Ultraviolet (UV) light process equipment
15.18	Info	UV Cryptosporidium inactivation and dose determination
15.18.1		<p>Sample selection</p> <p>When validating a range of aquatic or recreational water use UV systems for inactivation of cysts such as <i>C. parvum</i>, each of the following variables shall be used to determine which UV reactor / systems and components shall be tested within the range of product. Select at least two worst-case models from the range of products based upon all of the following variables.</p> <ul style="list-style-type: none"> — test the unit representative of the worst-case reactor hydraulics and UV dose delivery as determined by computational fluid dynamics modeling, including intensity and flow modeling; — test the unit with the lowest power to highest flow rate; — test one unit of each configuration (if family range contains U and S reactors, test each);



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		<p>— test one unit of each UV lamp type (if alternate lamp types or suppliers, test each);</p> <p>— <u>in the case where the UV system utilizes low pressure (LP) lamps, it is sufficient to provide a data sheet of the lamp that includes the expected lamp life. In addition, the following characteristics of the lamp must be the same:</u></p> <ul style="list-style-type: none"> — <u>lamp length, the length of the lamp from base face to base face, ± 0.5 in;</u> — <u>the arc length, the lit length, ± 0.5 in;</u> — <u>the diameter, ± 10%;</u> — <u>the quartz material, fused silica, synthetic quartz, deep UV blocking;</u> — <u>electrode current, ± 0.2 A;</u> — <u>lamp wattage, ± 5 W;</u> — <u>output, 185/254 nm or 254 nm;</u> — <u>mercury source, elemental, spot amalgam, pocket amalgam; and</u> — <u>connections, single ended, double ended.</u> <p>— test one unit of each UV sensor type (if alternate UV sensor types or suppliers, test each).</p> <p>NOTE — The above variables require that multiple UV systems are tested in order to validate a range of products.</p>

Requirements for Treatment Chemicals were consolidated into a new section:

Treatment chemicals used in recreational water and facilities

27	Consolidation, Editorial	Treatment chemicals requiring a health effects evaluation includes those directly added to the waters of pools and spas. These treatment chemicals shall not impart undesirable levels of either chemical constituents or contaminants to the water. See standard for details.
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Annex N-2	Info	Test methods for the evaluation of filters
N-2.5	Info	Turbidity reduction test

N-2.5.4		<p>Turbidity reduction test method</p> <p>a) Determine the volume of water needed to achieve a turnover rate of no greater than 30 min when <u>time according to the equation below when</u> the filter is operated at the <u>maximum</u> design flow rate. Fill the test tank with the required volume of water.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> $\text{turnover time (minutes)} = \left(\frac{8}{\sqrt{U}} + 8 \right), \pm 5\%, \text{ maximum } 30$ </div> <p>where:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> $U = \text{filtration rate, } \left(\frac{\text{gpm}}{\text{ft}^2} \right) = \frac{\text{maximum design flow rate (gpm)}}{\text{effective filtration area (ft}^2\text{)}}$ </div>
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		<p><u>Volume (gallons) = turnover time (minutes) × maximum design flow rate (gpm)</u></p> <p><u>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.</u></p> <p>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.</p> <p>c) Install and condition the filter according to the manufacturer’s instructions. Operate the filter at the <u>maximum</u> design flow rate.</p> <p>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.</p> <p>e) Calculate the turbidity remaining (TR) ratio at each tank volume using the following equation: $TR = (TB3 - TB1) / (TB2 - TB1)$</p> <p>f) <u>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).</u></p> <p>g) <u>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. Prior to this second test, the water from the test tank and the filter housing shall be drained. The water used for the second test shall meet the requirements of Section N-2.5.3. The acceptance criteria shall be applied to the TR ratio from this second test.</u></p>
N-2.5.5		<p>Acceptance criteria</p> <p>After the fifth tank volume, the TR ratio shall be ≤ 0.30. This is equivalent to a 70% or greater reduction in turbidity.</p> <p><u>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.</u></p>
N-2.9.1-3		<p><i>New section added;</i></p> <p>Test method for <i>Cryptosporidium parvum</i> oocyst reduction</p> <p>See standard for details.</p>