Joint Committee Issue Paper

NSF Standard(s) Impacted: NSF/ANSI/CAN 50 - 2019

Background:
Provide a brief background statement indicating the cause and nature of concern, the impacts identified relevant to public health, public understanding, etc, and any other reason why the issue should be considered by the Committee. Reference as appropriate any specific section(s) of the standard(s) that are related to the issue.

Section 20 – Water quality testing devices. The scope of this sections covers test strips and reagents with or without electronic comparators as well as probe based technologies. However, the test methods are not supported in this section.

Recommendation:
Clearly state what action is needed: e.g., recommended changes to the standard(s) including the current text of the relevant section(s) indicating deletions by use of ~~strike-out~~ and additions by highlighting or underlining; e.g., reference of the issue to a Task Group for detailed consideration; etc.

Incorporate applicable requirements from section 19 (automated controllers) into section 20.

- Data plate markings
- Display accuracy
- Chemical resistance

Supplementary Materials (photographs, diagrams, reports, etc.):
If not provided electronically, the submitter will be responsible to have sufficient copies to distribute to committee members.

This is not complete but provides the TG with a starting point.

20 Water quality testing devices (WQTD)

20.1 General

WQTD are used to monitor and measure recreational water quality parameters to help maintain the optimal swimming environment. Products covered by this section include test strips used with or without an electronic comparator, chemical (liquid or powder) kits with or without electronic comparators, and analytical probes as well as other products or technologies.

20.2 Testing

Reagent, dry or wet, based WQTD units selected for testing shall be from at least 2 different batches or manufacturing runs. Each lot submitted for initial testing shall have a minimum of 50% shelf life remaining at the start of the testing. Products are conditioned, or calibrated, or both as appropriate, per the manufacturer's instructions then exposed and tested per Annex N-11 requirements to various test solutions to evaluate their accuracy, repeatability, reproducibility, and shelf life, within specified use ranges.

4 monitors and probes for each parameter shall be submitted for testing a sensor based WQTD.

20.2.1 Temperature of room used for testing

Testing shall be conducted at laboratory ambient air temperature and humidity with the stock and test

solutions noted in Annex N-11.

20.2.2 Temperature of solution used for testing
The WQTD shall be tested at one or both solution temperatures of pool and spa as noted in Annex N-11, Section N-11.1.1.2 and based upon the manufacturer's recommendation.

20.2.3 Test parameters
For each parameter tested, it shall meet the applicable requirements in Annex N-11. The WQTD shall be used to analyze test solutions within each range shown in Annex N-11 (see table below) if the parameter falls within the WQTDs operating range for that parameter. Test solutions shall be divided equally to test the WQTD seven times at each concentration for each unit of the WQTD under test.

20.2.4 Accuracy within operating range (Level 1, 2, or 3)
Testing shall be conducted based upon the manufacturers recommended/claimed use range and the operating ranges to evaluate conformance with L1, L2, or L3 requirements for each parameter. All test points shall be used to determine accuracy and the seven test results shall be averaged to determine compliance with Annex N-11 (for that parameter).

20.2.5 Precision and reproducibility

At each parameter tested, the average standard deviation in the results for each unit of a WQTD shall meet the precision requirements of Section N-11.13 based on the level of the WQTD.
— test strips: test two lots of test strips with one set of solutions. Both lots shall meet the precision requirements, and the difference between the accuracy of the first and second lot of the test strips shall meet the reproducibility requirements;
— colorimeters / titrators / spectrophotometers: test one device with two reagent lots with one set of solutions, and test two devices with one reagent lot on a different day with a fresh midpoint solution. Both reagent lots shall meet the precision requirements, and the difference between the accuracy of the first and second lot of the reagents shall meet the reproducibility requirements. On the second day, the difference between the accuracy of the first and second devices shall meet the reproducibility requirements.

20.2.6 Reagent Shelf life

The shelf life for the reagents and components of a WQTD shall be at least as long as specified by the manufacturer when the reagents and components are tested in accordance with Section N-11.14. When tested with reagents and components stored for the manufacturer specified shelf life (± 2 weeks), the accuracy, and repeatability of the WQTD shall meet the requirements of Annex N-11. After initial testing of the WQTD, it shall be stored in accordance with the manufacturer's instructions and retested at the manufacturer's prescribed shelf life (± 2 weeks) for compliance to these requirements in Section 20 and Annex N-11.

20.2.7 Sensor chemical resistant materials

Parts normally in contact with the chemically treated water shall be resistant to the solutions specified in Section N-10.1.2.

20.3 Operation and use instructions

20.3.1 Regent based

The manufacturer shall provide operation and use instructions with the WQTD. The instructions shall

address:
— WQTD components;
— WQTD conditioning, if applicable;
— detailed use instructions, including:
— sample size;
— reagent(s) required and measurement of reagents;
— addition of reagent(s) and mixing;
— wait times, if applicable; and
— method of determining test result, including calculation and conversion factors, as applicable.
— maintenance of WQTD components, if applicable;
— proper storage of the WQTD and its components;
— trouble shooting suggestions, dilution use explanation;
— range limitations or variations of the WQTD for use or testing parameters;
— potential interference agents; and
— suggested sequence of water quality tests (i.e., pH first, then chlorine).

20.3.2 Sensor Based
— the manufacturer shall supply installation and operation instructions with each automated controller. These instructions shall include the following:
— proper installation, operation, and maintenance instructions; installation instructions shall document how the controller should be wired in order to provide for electrical interlock for chemical feeders with a circulation pump;
— diagrams and a parts list to facilitate the identification and ordering of replacement parts;
— replacement probe or sensor model numbers;
— maximum external load rated in volts and amps;
— caution statement warning the user that the automatic controller should not be installed where it is accessible to the public; and
— applicable operating ranges (such as pH and ORP minimum and maximum) for the automated controller.

20.4 WQTD marking / identification

20.4.1 Reagent Based
The WQTD shall have identification or marking that is permanent, easy to read, and securely attached to the unit. The identification or marking shall contain:
— manufacturer's name and contact information (address, phone number, website, or prime supplier);
— model number or part number of the unit;
— parts list to facilitate the identification and ordering of replacement parts (or referral to a manual or website for those units with size constraints);
— WQTD classification level (L1, L2, L3) for each parameter (or lowest level achieved); and
— disposal date of the WQTD and its components.

24.4.2. Sensor Based

Data plate shall be permanent, easy to read, and securely attached, cast, or stamped onto the automated controller at a location readily accessible after normal installation. Data plate shall contain at least the following:
— equipment name;
— manufacturer's name and contact information (address, phone number, website, or prime supplier);
— model number;
— electrical requirements; volts, amps, and Hertz;
— maximum external load rated in volts and amps;

Joint Committee Issue Paper

— serial number and date of manufacture;
— caution statements (prominently displayed); and
— replacement sensor model numbers.

I hereby grant NSF International the non-exclusive, royalty free rights, including non-exclusive, royalty free rights in copyright; in this item and I understand that I acquire no rights in any publication of NSF International in which this item in this or another similar or analogous form is used.

Signature*: Sung Choe
Company: NSF International
Telephone Number: _____ E-mail: choe@nsf.org
Is this a revision of a previous Issue Paper (if yes put original issue number): _____
Submission Date: August 21, 2020

Please submit to: Joint Committee Secretariat, Jason Snider at jsnider@nsf.org

**Type written name will suffice as signature*