



WQA ORD1901 - Harmonized Product Requirements for Drinking Water Treatment Units that make Manganese Performance Claims

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Table of Contents

1. Scope	4
2. References	4
3. Requirements	4
Annex A - Conformity Assessment	6

Disclaimer

The Water Quality Association (WQA) does not assume or undertake to discharge any responsibility of the manufacturer or any other party using this standard. WQA shall not be responsible to anyone for the use of or reliance of the testing procedure by anyone. WQA shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation, or reliance upon this standard.

Forward

This protocol was developed through a collaborative effort between WQA and Health Canada. It is intended as a protocol to guide certification work performed through the WQA Gold Seal program, but is also available for public use by other stakeholders, Certification Bodies, or as a seed document for further standard development. A copy of the standard can be obtained by contacting WQA.

Water Quality Association



The Water Quality Association (WQA) is a not-for-profit international trade association representing the residential, commercial and industrial water treatment industry. WQA maintains a close dialogue with other organizations representing different aspects of the water industry in order to best serve consumers, government officials, and industry members. WQA is an information resource and a voice for the water industry, an educator for professionals, a laboratory for product testing and certification, and a communicator to the public.

Health Canada

“Health Canada is a federal institution responsible for helping Canadians maintain and improve their health. It ensures that high-quality health services are accessible, and works to reduce health risks.”

<https://www.canada.ca/en/health-canada.html>

Information on the Guidelines for Canadian Drinking Water Quality can be found at:

<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality.html#guide>

1. Scope

- 1.1. This ORD establishes material safety, structural integrity, performance and literature requirements for Drinking Water Treatment Units (DWTUs) that are designed to reduce the concentration of manganese. The product requirements in this ORD are intentionally harmonized in accordance with NSF/ANSI 44, 53, 58 and 62.
- 1.2. Any DTWU which falls under the scope of either NSF/ANSI 44, 53, 58 or 62; and also makes a performance claim for manganese; can be evaluated against the requirements in this standard.

2. References

- 2.1. NSF/ANSI 44 – Residential Cation Exchange Water Softeners. The 2018 version of NSF/ANSI 44 was consulted when writing this standard, but the most current version of NSF/ANSI 44 shall be used where product requirements are referenced herein.
- 2.2. NSF/ANSI 53 – Drinking Water Treatment Units – Health Effects. The 2017 version of NSF/ANSI 53 was consulted when writing this standard, but the most current version of NSF/ANSI 53 shall be used where product requirements are referenced herein.
- 2.3. NSF/ANSI 58 – Reverse Osmosis Drinking Water Treatment Systems. The 2017 version of NSF/ANSI 58 was consulted when writing this standard, but the most current version of NSF/ANSI 58 shall be used where product requirements are referenced herein.
- 2.4. NSF/ANSI 62 – Drinking Water Distillation Systems. The 2018 version of NSF/ANSI 62 was consulted when writing this standard, but the most current version of NSF/ANSI 62 shall be used where product requirements are referenced herein.
- 2.5. CSA B483.1 – Drinking Water Treatment Systems. Reaffirmed 2017.
- 2.6. Standards Council of Canada, Program Overview – Guidelines for the Development and Maintenance of Other Recognized Documents (ORDs), 2018-10-05.
- 2.7. Standards Council of Canada, Accreditation Services. SCC Requirements and Guidance – Product, Process, and Service Certification Body Accreditation Program, 2018-10-05.

3. Requirements

- 3.1. Cation Exchange Water Softeners.
 - 3.1.1. For cation exchange water softeners that fall under the scope of NSF/ANSI 44, all product requirements in NSF/ANSI 44 shall apply with the following exceptions.
 - 3.1.2. The acceptance criteria for Material Safety in NSF/ANSI 44 section 4.1.3 shall be modified by adjusting the Total Allowable Concentration (TAC) for manganese to 0.1 mg/L.
 - 3.1.3. Performance claims for manganese shall be tested using the procedure in NSF/ANSI 44 section 7.2.4 with the following modifications:
 - 3.1.3.1. Replacing barium with manganese;
 - 3.1.3.2. The challenge water shall contain 5+/-1 grains of magnesium hardness (as CaCO₃ equivalent) per gallon and 15+/-1 grains of calcium hardness (as CaCO₃ equivalent) per gallon for a total of 20 +/- 2 grains hardness (as CaCO₃ equivalent) per gallon;
 - 3.1.3.3. The testing shall be done at a pH of 7.0 +/-0.5 pH units;
 - 3.1.3.4. The average of all influent challenge concentrations shall be between 0.9-1.1 mg/L manganese;
 - 3.1.3.5. Each individual influent challenge concentration shall be between 0.7-1.3 mg/L manganese;
 - 3.1.3.6. Effluent water samples shall be collected and analyzed at the beginning, 25%, 50%, 75% and 100% of the service cycle established through testing in NSF/ANSI 44 section 7.1; and
 - 3.1.3.7. The maximum product water concentration (effluent) shall not exceed 0.05 mg/L manganese.

- 3.2. Filters (and treatment trains that operate through a mechanical filtration process).
- 3.2.1. For filters that fall under the scope of NSF/ANSI 53, all product requirements in NSF/ANSI 53 shall apply with the following exceptions.
- 3.2.2. The acceptance criteria for Material Safety in NSF/ANSI 53 section 4.1.3 shall be modified by adjusting the TAC for manganese to 0.1 mg/L.
- 3.2.3. Performance claims for manganese shall be tested using the procedure in NSF/ANSI 53 section 7.4.2; the testing shall be done at a pH of 7.5 +/-0.25; the average of all influent challenge concentrations shall be between 0.9-1.1 mg/L manganese; each individual influent challenge concentration shall be between 0.7-1.3 mg/L manganese; and the maximum product water concentration (effluent) shall not exceed 0.05 mg/L manganese.
- 3.2.3.1. Alternatively, the manufacturer shall have the option of testing at a lower pH level they designate.
- Note: Manganese is easier to remove by filtration when it is in an oxidized state, which would correlate with higher pH levels. Testing at pH 7.5 will assure oxidation of manganese and allow for effective filtration. It is therefore the default target pH level for testing of filtration systems, but it will result in a literature requirement that restricts the applicability of the claim to pH levels at or above 7.5. Manufacturers should be encouraged to test at pH 6.5 in order to cover the full range of pH values that are allowable for Public Water Supplies, but they are not required to test at the lower pH if they do not believe their product will pass at that level. Allowing manufacturers to select a lower pH for testing is will also allow the testing of systems and treatment trains which incorporate a separate oxidation step, or which would be effective at filtering manganese at a lower pH through some other means. Encouraging manufacturers to test at the lowest pH value their product can handle will provide consumers with more options for filtration type systems that operate effectively at pH values below 7.5.
- 3.2.4. The installation instructions and the performance datasheet shall disclose to the user the minimum pH level at which the product is effective at removing manganese based on the target pH level at which the product was tested.
- Note: Normally this will be a pH level of 7.5 unless the manufacturer requested testing at a lower target pH level as explained in the notation under section 3.2.2.1 above.
- 3.3. Reverse Osmosis (RO) Systems.
- 3.3.1. For RO systems that fall under the scope of NSF/ANSI 58, all product requirements in NSF/ANSI 58 shall apply with the following exceptions.
- 3.3.2. The acceptance criteria for Material Safety in NSF/ANSI 58 section 4.1.1 shall be modified by adjusting the TAC for manganese to 0.1 mg/L.
- 3.3.3. Performance claims for manganese shall be tested using the procedure in NSF/ANSI 58 section 7.1.2; the average of all influent challenge concentrations shall be 0.9-1.1 mg/L manganese; each individual influent challenge concentration shall be between 0.7-1.3 mg/L manganese; and the arithmetic mean of all product water sample results and 90% of the individual product water samples shall be less than or equal to 0.05 mg/L.
- 3.4. Distillation Systems.
- 3.4.1. For Distillation systems that fall under the scope of NSF/ANSI 62, all product requirements in NSF/ANSI 62 shall apply with the following exceptions.
- 3.4.2. The acceptance criteria for Material Safety in NSF/ANSI 62 section 4.1.3 shall be modified by adjusting the TAC for manganese to 0.1 mg/L.
- 3.4.3. Performance claims for manganese shall be tested using the procedure in NSF/ANSI 62 section 7.2; the average of all influent challenge concentrations shall be 0.9-1.1 mg/L manganese; each individual influent challenge concentration shall be between 0.7-1.3 mg/L manganese; and the arithmetic mean of all product water sample results and 90% of the individual product water samples shall be less than or equal to 0.05 mg/L.

Annex A - Conformity Assessment Information for Certification Bodies

Scope

- 1.1. This annex is informational only and does not contain any new product requirements. It is intended to provide Certification Bodies with guidance on how this WQA standard can be used for testing and certification of products. It also includes a “preferred strategy” for conformity assessment that is intended to make this a very simple process for regulatory officials, inspectors, end-users, manufacturers and Certification Bodies.

Who can use this standard?

- 1.2. A copy of the latest version of this WQA standard can be freely obtained by contacting WQA. There is no fee or royalty due to WQA for the use of this WQA standard by another Certification Body.

How does this standard fit in with other standards and codes?

- 1.3. It is important to understand that this WQA standard establishes a temporary mechanism for Certification Bodies to test and/or certify Drinking Water Treatment Units (DWTUs) that can effectively remove manganese. It is being published in response to a new Maximum Allowable Concentration (MAC) for manganese that will soon be issued by Health Canada. While there is an immediate need for this standard, it is not WQA’s intent to establish and maintain this standard as a permanent DWTU standard. It is WQA’s opinion that there is already a broad scope of DWTU standards which are approved for use by the Standards Council of Canada (SCC), and that only a temporary solution to address this gap is needed. The following guidance therefore includes information on WQA’s long term plans to promote the coverage of this gap through modification of existing DWTU standards, and it also provides a suggested strategy (Option 1) on how Certification Bodies can ensure a smooth transition of claims once that occurs.
- 1.4. As stated above, it is WQA’s intent to push the adoption of manganese claims into the relevant NSF/ANSI standards. For softeners, that would be NSF/ANSI 44; NSF/ANSI 53 for filters; NSF/ANSI 58 for RO systems; and NSF/ANSI 62 for distillation systems. This process will be initiated upon approval of this standard but may take many months to complete. After that is completed, WQA will then promote incorporation of the new versions of the NSF/ANSI standards into CSA B483.1.
- 1.5. Certification Bodies should also be aware that certification to CSA B483.1 is required for all DWTUs, in some Canadian jurisdictions. Standard CSA B483.1 incorporates most of the requirements in the relevant NSF/ANSI standards that pertain to WQA ORD1901. Therefore, clients who are only selling in Canada need to comply with the relevant NSF/ANSI standards, but may also require certification to CSA B483.1.
- 1.6. Certification Bodies should also be aware that there are numerous plumbing codes in the U.S. which reference the NSF/ANSI standards. Therefore, clients who are only selling in the U.S. may need to pursue certification to the NSF/ANSI standards, but may not need certification to CSA B483.1.
- 1.7. However, many clients wish to sell into both the U.S. market and Canada, and since they already have to meet the requirements in the NSF/ANSI standards in order to qualify for CSA B483.1, many chose to certify to both sets of standards (CSA B483.1 and the relevant NSF/ANSI standards).

What other product requirements are applicable?

- 1.8. The Certification Body should understand that no matter which option is used for conformity assessment, this standard is intentionally written to incorporate all of the existing requirements under the applicable NSF/ANSI standard. The Certification Body also needs to understand how CSA B483.1 fits into this picture. To summarize:
 - 1.8.1. For all DWTUs, certification to CSA B483.1 is required for sale in some Canadian jurisdictions. Standard CSA B483.1 incorporates all of the requirements below from the NSF/ANSI standards by reference but only for POU units. Certification of POE units to CSA B483.1 should also include any health-based claims in order to comply with WQA ORD 1901.
 - 1.8.2. For softeners, all the requirements in NSF/ANSI 44 have to be met in order to comply with WQA ORD1901 except as otherwise noted in this standard.
 - 1.8.3. For filters, all of the requirements in NSF/ANSI 53 have to be met in order to comply with WQA ORD1901 except as otherwise noted in this standard.
 - 1.8.4. For RO units, all of the requirements in NSF/ANSI 58 have to be met in order to comply with WQA ORD1901 except as otherwise noted in this standard.
 - 1.8.5. For distillation units, all of the requirements in NSF/ANSI 62 have to be met in order to comply with WQA ORD1901 except as otherwise noted in this standard.

Preferred Option for conformity assessment

- 1.9. Option 1 (preferred approach) – Provide a listing under the NSF/ANSI standard and/or CSA B483.1 with corresponding footnotes.
 - 1.9.1. Using this option, the Certification Body would provide a certified claim under the applicable NSF/ANSI standard and/or CSA B483.1, with informational footnotes indicating that the claim was tested according to the procedure in WQA ORD1901.
 - 1.9.2. As an example, using WQA ORD1901 a softener can be certified to NSF/ANSI 44 and/or CSA B483.1 with a manganese claim. A listing note on the Certification Body’s website would indicate that the manganese claim was tested in accordance with the procedure in WQA ORD1901. A similar footnote on the product literature (e.g., performance datasheet) would also indicate to the end-user that the manganese claim was tested in accordance with the procedure in WQA ORD1901.
 - 1.9.3. This option will provide the least amount of confusion for end-users of the products and for regulatory officials and inspectors who are reviewing the certification status of a product.
 - 1.9.4. Lastly, this option provides a clear pathway for the manufacturer towards a smooth and full transition to adding this claim under the applicable NSF/ANSI standard, and by extension under CSA B483.1, for POU units.
 - 1.9.5. It is WQA’s intent to promote manganese be added to the NSF/ANSI standards in accordance with NSF Standard Development procedures, and then to promote incorporation of the new version of each relevant NSF/ANSI standard into CSA B483.1 in accordance with CSA Standard Development procedures. As these transitions occur, the Certification Body will need to review the requirements adopted in the new NSF/ANSI standards against the requirements in this standard and make their own determination on whether new testing is required. It is WQA’s intent to minimize the potential need for new testing by adopting procedures in this standard which are already harmonized with the applicable NSF/ANSI standard. Once the Certification Body has satisfied their internal determination regarding any need for new testing, the listings will already exist under the correct standard, and the Certification Body and manufacturer can simply drop the listing note and footnotes in their literature when they perform the next slated update.

Secondary option for conformity assessment

- 1.10. Option 2 – Provide a separate listing under WQA ORD1901
 - 1.10.1. Using this option, the Certification Body would provide a separate listing referencing WQA ORD1901 as the standard.
 - 1.10.2. Under this option the Certification Body will need to make their own adjustments for literature requirements. For example, conformance statements for a softener would need to reference WQA ORD1901 instead of NSF/ANSI 44 or CSA B483.1.
 - 1.10.3. Under this option the Certification Body will also need to inform their customers regarding plans to transition the listing to the applicable standard once a replacement standard is approved for use by the Standards Council of Canada.

Least preferred option – “Independently Tested” claims

- 1.11. Option 3 (least preferred option) – “Independently Tested” claims.
 - 1.11.1. It is understood that upon release of WQA ORD1901 for public use, it is possible that Certification Bodies and Independent Laboratories may use this reference document to provide the manufacturer with an “independently tested” claim but stop short of providing full certification. WQA cannot prevent the use of this document in that manner but provides the following guidance on why this approach is the least desirable option.
 - 1.11.2. First, depending on how the claim is structured, it may only cover performance for manganese. This would not ensure that all of the other requirements in the applicable DWTU standards, such as material safety and structural requirements, have been met. And that gap may not be well understood by public health officials, inspectors and end-users of the product. As stated above, it is not the intent of this document to provide a way around meeting all those other requirements, but to in fact incorporate them by reference.
 - 1.11.3. And second, independently tested claims do not provide the end user with the same level of assurance as a full product certification. Product certification activities are overseen by independent accreditation bodies, including the Standards Council of Canada (SCC) and the American National Standards Institute (ANSI). Product certification also incorporates other aspects which provide the end user with a higher level of assurance, including activities such as factory audits to ensure that there are no changes to the product which have not been reviewed and approved by the Certification Body.