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Drinking water treatment units: the importance of **UL certification**

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In order for a drinking water treatment unit to be certified to national standards, it must be evaluated by an American National Standards Institute (ANSI)-accredited third-party certification organization, such as Underwriters Laboratories Inc.

Established in 1999, UL's Drinking Water Treatment Unit (DWTU) Certification Program evaluates systems and components that are designed to treat potable water. A total of seven ANSI standards and one protocol are available to certify DWTU products and components for health effects, aesthetics and performance. These standards provide a basis by which manufacturers can validate the quality and dependability of their products, and by which consumers and regulatory authorities can be confident of their safety and performance.

Each standard is technology-specific, so certifying to the proper standard is key. Below is a list of the standards to which UL certifies the various DWTUs, as well as examples of products and claims that can be stated.

Standard/Protocol	Examples of Products	Examples of Elective Contaminant Reduction Claims
NSF/ANSI Standard 42 Drinking Water Treatment Units – Aesthetic Effects	Any type of carbon filter, such as pitcher filters, faucet-mount filters, whole house filters, etc. Also includes pleated filters and ceramic filters	Chlorine reduction, particulate reduction, chloramine reduction
NSF/ANSI Standard 44 Residential Cation Exchange Water Softeners	Water softeners	Hardness reduction (required), barium reduction, radium reduction
NSF/ANSI Standard 53 Drinking Water Treatment Units – Health Effects	Any type of carbon filter, such as pitcher filters, faucet-mount filters, whole house filters, etc. Also includes ceramic filters	Volatile organic chemical (VOC) reduction cyst reduction, turbidity reduction, arsenic reduction, lead reduction
NSF/ANSI Standard 55 Ultraviolet Microbiological Water Treatment Systems	Ultraviolet (UV) systems	Microbiological performance to disinfect water (required)
NSF/ANSI Standard 58 Reverse Osmosis Drinking Water Treatment Systems	Reverse osmosis (RO) systems	Total dissolved solids (TDS) reduction (required), volatile organic chemical (VOC) reduction, arsenic reduction, nitrate/nitrite reduction
NSF/ANSI Standard 62 Drinking Water Distillation Systems	Distillation systems	Total dissolved solids (TDS) reduction (required), arsenic reduction, lead reduction
NSF/ANSI Standard 177 Shower Filtration Systems – Aesthetic Effects	Shower filters	Free available chlorine reduction (material extraction is less extensive)
USEPA Guide Standard and Protocol for Testing Microbiological Water Purifiers	Water purifiers	Cyst reduction, bacteria reduction, virus reduction

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The DWTU standards contain both mandatory and elective testing requirements. The mandatory requirements include material extraction and structural integrity testing. The material extraction portion involves the evaluation of all water contact materials in the system or component that could potentially leach contaminants into the drinking water and cause health issues or affect the quality of the water. The one exception to the material extraction requirement is NSF/ANSI Standard 177 for shower filtration systems. Because shower filters are not designed for the purpose of providing drinking water, the material review is less extensive.

The other mandatory requirement for DWTUs is structural integrity. This includes cyclic, hydrostatic and burst pressure testing, and requires that the products remain intact and not leak throughout each test. DWTU systems must also conform to other minimum performance requirements, such as rated service flow, rated pressure drop and/or electrical safety. These requirements are standard-specific.

Additionally, the DWTU systems must make a minimum of one contaminant reduction claim. Some standards require specific contaminant reduction claims to be performed. For example, NSF/ANSI Standard 44 requires all water softeners be tested for hardness reduction.

The standards for DWTU systems also specify product literature requirements that must be included with each unit. This literature includes an installation, operation and maintenance manual that specifies basic information regarding the functionality of the system; a data plate or label that is permanently fastened to the system; a performance data sheet summarizing contaminant reduction performance and warranty information; and, where applicable, replacement component packaging to help consumers identify the correct replacement component for their system.

Prior to certification, every manufacturing location is inspected to confirm the accuracy of the information

provided to UL, to document the manufacturing process and to witness the manufacturer's in-house quality control procedures.

Once all requirements are met, certification and authorization to use the UL Water Quality Mark are granted. DWTUs are required to be recertified every five years, which includes performing the material extraction, structural integrity and the contaminant reduction testing on each DWTU system. In addition, during this five-year period, UL conducts unannounced, quarterly inspections at every manufacturing location. These inspections include the verification of suppliers and materials used in the construction of the DWTU and the review of the manufacturer's quality assurance program. Each inspection is concluded with a summary report, which includes any variations found during the inspection. These variations must be corrected as soon as possible or further action may be taken.



Based on the above certification requirements, it is evident that there may be a significant difference between UL certified versus non-certified DWTU products. Manufacturers, regulatory authorities and consumers benefit by having the assurance that DWTU products certified by UL meet or exceed industry standards for performance and safety.

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