



ENERGY STAR® Program Requirements Product Specification for Water Coolers

Eligibility Criteria Draft 1 Version 2.0

Following is the Draft 1 **Version 2.0** product specification for ENERGY STAR qualified water coolers. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

1) Definitions: Below are the definitions of the relevant terms in this document.

- A. Water Cooler: A freestanding device that consumes energy to cool and/or heat potable water.
 - a. Cold Only Units: Units that dispense cold water only.
 - b. Hot and Cold Units: Units that dispense both hot and cold water. Some units may also offer room-temperature water.
 - c. Cook and Cold Units: Units that dispense both cold and room-temperature water.
- B. Water Source:
 - a. Bottle-type: A bottle or reservoir supplies water to the water cooler.
 - b. Point of Use (POU): The water cooler is connected to a pressurized water source.
 - c. Conversion-type Water Cooler: A unit that ships as either Bottle-type or POU and includes a conversion kit intended to convert the Water Cooler from a Bottle-type unit to a POU unit or to convert a POU unit to a Bottle-type unit.
- C. Water Storage:
 - a. Storage: Thermally conditioned water is stored in a tank in the water cooler and is available instantaneously.
 - b. On Demand: The water cooler heats water as it is requested, which typically takes a few minutes to deliver.
- D. Compartment-type Water Cooler: A water cooler which, in addition to the primary function of cooling and dispensing potable water, includes a refrigerated compartment with or without provisions for making ice.
- E. Test Modes:
 - a. On Mode with No Water Draw: A test that records the 24-hour energy consumption of a water cooler with no water drawn during the test period. This test was formerly known as “Standby”.
 - b. On Mode with Water Draw: A test that records the energy delivered in a water draw and the subsequent energy consumed while recovering from that water draw. Detailed steps can be found in Sections 6.2 and 6.3 of the ENERGY STAR Water Cooler Test Method.

- c. On Mode Water Draw Performance (OMP): A metric for water draw performance that compares the energy delivered and energy consumed by the water cooler. The calculation for OMP can be found in Section 7.6 of the ENERGY STAR Water Cooler Test Method.

F. Acronyms:

- a. kWh: Kilowatt Hours
- b. POU: Point of Use
- c. OMP: On Mode Water Draw Performance

Note: EPA has introduced the following definitions for Water Cooler types in the Draft 1 Version 2.0 specification: Bottle-type, Point of Use, Storage, On Demand, and Conversion-type. New test terminology is also introduced along with a relevant metric. Many of these terms were included in the Draft 1 and Draft 2 ENERGY STAR Test Methods, published May 2011 and February 2012, respectively. These definitions are applicable to both the specification and the test method. Stakeholders are encouraged to provide feedback on the definitions provided in Section 1.

2) Scope:

- A. Included Products: Products that meet the definition of a water cooler as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B.
- B. Excluded Products: Units that provide pressurized water and are not free standing (i.e., wall mounted, under sink, or otherwise building integrated) are not eligible for ENERGY STAR. Air-Source units and units with a water source other than bottled or tap water (POU) are not eligible.

3) Qualification Criteria:

- A. Energy and Water Consumption Requirements:

Table 1: Energy-Efficiency Criteria for ENERGY STAR Qualified Water Coolers	
Water Cooler Category	Qualification Levels
On Mode with No Water Draw	
Cold only and Cook and Cold units	≤ 0.16 kWh/day
Hot and Cold units – Storage-type	≤ 0.81 kWh/day
Hot and Cold units – On Demand	≤ 0.18 kWh/day
On Mode with Water Draw	
TBD	TBD

- B. Credit for Energy Saving Devices: If the unit has a feature designed to reduce the energy consumption when no water is drawn, and energy saving features can be disabled, a credit can be applied for purposes of qualification of that unit following the procedure below.
 - a. Test the unit with the energy saving feature disabled following Sections 6.1 and 7.1 in the ENERGY STAR Test Method.(Q_{24hr})

- b. Repeat the test with the energy saving feature enabled. ($Q_{24hr \text{ EnergySaving}}$). Water temperatures do not need to conform to Section 4.O during this testing.
- c. The modified test result with the energy saving credit incorporated, for purposes of qualification with the On Mode with No Water Draw levels provided in Table 1, shall be calculated as follows:

$$Q_{24hr \text{ Modified}} = 0.5 * Q_{24hr} + 0.5 * Q_{24hr \text{ EnergySaving}}$$

Note: With this draft, EPA is proposing levels for On Mode with No Water Draw based on the performance of products on EPA's ENERGY STAR Qualified Product List (QPL). Additionally, EPA is assembling data reflective of products' performance in On Mode with Water Draw. This data will inform EPA's decision regarding inclusion of On Mode with Water Draw efficiency criteria in the next draft of this specification. EPA wishes to understand better the savings opportunity associated with an ENERGY STAR focus on On Mode with Water Draw mode including the time products remain in On Mode with Water Draw before returning to a low power state. Lastly, EPA is seeking data on the cost associated with testing On Mode with Water Draw.

EPA understands that some stakeholders may wish to test product performance and the effectiveness of the new Test Method for On Mode No Water Draw. EPA will consider all data developed using the Final ENERGY STAR Water Cooler Test Method (Rev. Sept-2012) for both On Mode with No Water Draw and On Mode with Water Draw and reported using the data template provided. The data assembly effort will conclude on November 9, 2012.

For On Mode with No Water Draw, EPA is proposing to split the hot and cold unit category into two subcategories, Storage and On Demand, with separate On Mode with No Water Draw requirements. This proposal is based on observed differences in applications. EPA believes that the proposed level for Storage-type units reflects performance of approximately the top 20-25% of available models. Preliminary testing of On Demand units by the U.S. Department of Energy (DOE) suggests that the level proposed for On Mode with No Water Draw for On Demand units is reasonable and representative of energy-efficient designs. Manufacturers are encouraged to submit On Mode with No Water Draw data for On Demand units, which will help us refine our understanding of the performance of these units.

Based on a review of the ENERGY STAR QPL, EPA believes that the Version 1.3 specification level continues to be representative of the most efficient designs for Cold Only and Cook and Cold units. EPA will consider any new data received during this Version 2.0 specification revision process.

EPA recognizes the energy savings potential that power management features offer consumers when enabled. As such, a credit is being proposed that rewards manufacturer efforts to include these features in water cooler designs if these features are enabled upon shipment. The equation provided above (Section 3.B.c.) assumes that thermally conditioned water will be available to users over a 12 hour period during a day, and the water during this period will meet requirements in Section 4.O of the test procedure. Stakeholders are encouraged to provide feedback on this proposed approach.

These draft levels were determined through analysis of the ENERGY STAR QPL. The Draft 1 analysis can be viewed by visiting the ENERGY STAR Product Development website at: <http://www.energystar.gov/revisedspecs> (click on "Water Coolers"). The analysis is presented within three PDF documents titled *ESData* and represents On Mode with No Water Draw in all instances.

C. Significant Digits and Rounding:

- a. All calculations shall be carried out with actual measured or observed values. Only the final result of a calculation shall be rounded. Calculated results shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

- b. Unless otherwise specified, compliance with specification limits shall be evaluated using exact values without any benefit from rounding.

4) Test Requirements:

- A. A representative model shall be selected for testing. The representative model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR. Qualification based on product family is not acceptable under this specification. Each individual model shall be tested and meet the requirements of this specification to be qualified as ENERGY STAR.
- B. When testing water coolers, the following test method shall be used to determine ENERGY STAR qualification.

Table 2: Test Methods for ENERGY STAR Qualification	
ENERGY STAR Requirement	Test Method Reference
On Mode with Water Draw and On Mode with No Water Draw	ENERGY STAR Test Method for Water Coolers, Rev. Sept-2012

- C. Manufacturers have the choice of conducting an additional test with energy saver features enabled. If, and only if, these features are enabled when shipped, the test may be rerun in its entirety with previously disabled energy saver features enabled following completion of the ENERGY STAR Water Cooler Test Method (Rev. Sept-2012). Water coolers that ship with these features enabled are eligible to receive the Credit for Energy Saving Devices presented in Section 3.B., above. For this retesting the provisions in Section 4.O of the test method shall be disregarded.

Note: Table 2 has been updated with a reference to the new ENERGY STAR Test Method. EPA has also added a clarification in Section 4.C that for water coolers offering energy saving features, manufacturers have the option of running a subsequent test with these features enabled. Results of this additional testing may be used for qualification purposes using the credit proposed in Section 3.B.c., only if these features are enabled when shipped. Both results shall be reported for qualification.

- 5) Effective Date:** The ENERGY STAR Water Cooler Specification shall take effect on **[TBD]**. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the model's date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.
- 6) Future Specification Revisions:** EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.