



ENERGY STAR[®] Program Requirements Product Specification for Clothes Washers

Eligibility Criteria Final Draft Version 6.0

Following is the **Final Draft Version 6.0** product specification for ENERGY STAR qualified clothes washers. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

Note: Through a separate stakeholder process, EPA is also revising the criteria for commercial clothes washers covered in the ENERGY STAR clothes washer program. EPA issued a Final Draft proposal for commercial washers on November 4, 2011. For clarity, the changes that were proposed in that Final Draft for commercial washers are shown in red font, while the changes being proposed in this Final Draft for combination all-in-one washer dryers (combo W/Ds) are shown in blue font. As a final step, EPA plans to combine changes from both revision processes into a single final Version 6.0 specification document.

Please send comments via email to appliances@energystar.gov no later than April 13, 2012.

- 1) **Definitions:** Below are the definitions of the relevant terms in this document.
- A. **Residential Clothes Washer:** A consumer product designed to clean clothes, utilizing a water solution of soap and/or detergent and mechanical agitation or other movement, and must be one of the following classes: automatic clothes washers, semi-automatic clothes washers, and other clothes washers.
 - i) **Residential Clothes Washer with Optional Dry Cycle:** A Residential Clothes Washer that has an optional add-on dry cycle, where drying is accomplished through use of electricity or gas as a heat source and forced air circulation; drying cannot be selected independently from a wash cycle.
 - B. **Commercial Clothes Washer:** A soft-mounted front-loading or soft-mounted top-loading clothes washer that is defined for use in:
 - (i) Applications in which the occupants of more than one household will be using the clothes washer, such as multi-family housing common areas and coin laundries; or
 - (ii) Other commercial applications.
 - C. **Combination All-in-One Washer-Dryer:** A consumer product designed to clean and dry fabrics in a single drum, where a separate drying cycle uses electricity or gas as a heat source and forced air circulation.
 - D. **Modified Energy Factor:** Modified Energy Factor ("MEF") is the present energy efficiency measure for all clothes washers. MEF is the quotient of the cubic foot (or liter) capacity of the clothes container divided by the total clothes washer energy consumption per cycle, with such energy consumption expressed as the sum of the machine electrical energy consumption, the hot water energy consumption, and the energy required for removal of the remaining moisture in the wash load. The units are cubic feet per kilowatt-hours (kWh) per cycle (ft³/kWh/cycle) (or liters per kilowatt-hour per cycle). The higher the value, the more efficient the clothes washer.
 - E. **Water Factor:** Water factor ("WF") is the present water efficiency calculation that allows the comparison of clothes washer water consumption independent of clothes washer capacity. The term is expressed as gallons per cycle per cubic foot (or liter per cycle per liter). WF is the quotient of the total weighted per-cycle water consumption divided by the cubic foot (or liter) capacity of the clothes washer. The lower the value, the more efficient the clothes washer.
 - F. **Basic Model:** Units of a given type of covered product (or class thereof) manufactured by one manufacturer, having the same primary energy source, and which have essentially identical electrical, physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency.

Note: No changes have been made to the definitions of Combination All-in-One Washer-Dryer and a Residential Clothes Washer with an Optional Dry Cycle that were proposed in Draft 2.

2) **Scope:**

- A. **Included Products:** Products that meet the definition of a residential clothes washer or commercial clothes washer as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B.
- B. **Excluded Products:** Clothes washers with a capacity of less than 1.6 ft³ and/or are configured in any way other than a front- or top-loading design are not eligible for ENERGY STAR. **Combination All-in-One Washer-Dryers and Residential Clothes Washers with an Optional Dry Cycle are not eligible for ENERGY STAR.**

Note: EPA has revised Section 2 to specify that Residential Clothes Washers with an Optional Dry Cycle are not eligible to earn the ENERGY STAR. After considering stakeholder comments, EPA believes it is more prudent to wait until there is a selection of products with an optional dry cycle available on the market and appropriate testing standards for them have been developed. Then, EPA would be able to further consider and possibly establish minimum requirements that address both the drying energy and water performance through a stakeholder process, eliminating the possibility of consumer confusion with having the label associated with a product based only on its washing performance. This approach will also provide a more level playing field for combo W/Ds and residential clothes washers with an optional dry cycle.

For consistency, EPA plans to incorporate this scope clarification into Version 5.1 by incorporating the two new definitions and by adding Residential Clothes Washers with an Optional Dry Cycle to the list of excluded products.

3) **Qualification Criteria:**

- A. **MEF and WF Requirements:**

Table 1: ENERGY STAR Criteria for Clothes Washers

Residential Clothes Washers	MEF \geq 2.0 WF \leq 6.0
Commercial Clothes Washers	MEF \geq 2.2 WF \leq 4.5

Note: For reasons noted above, in this Final Draft EPA is proposing that clothes washers with an optional dry cycle not be eligible for qualification under Version 6.0. Thus, EPA has removed the associated reporting requirement and test guidance from Section 3 that had been proposed in the prior draft.

- B. **Significant Digits and Rounding:**

- a. **All calculations shall be carried out with directly measured (unrounded) values.**
- b. **Unless otherwise specified, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.**
- c. **Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.**

C. **Model Numbers:** Model numbers used for ENERGY STAR qualified product submissions shall be consistent with Federal Trade Commission (FTC) and Department of Energy (DOE) submissions.

4) **Test Requirements:**

A. One of the following sampling plans shall be used to test for qualification to ENERGY STAR:

- a. A representative unit shall be selected for testing based on the definition for Basic Model provided in Section 1. above; or
- b. Units shall be selected for testing per the sampling requirements as defined in Table 2:

**Table 2: ENERGY STAR
Sampling Requirements for Clothes Washers**

Residential Clothes Washers	10 CFR § 429.20, which references 10 CFR § 429.11
Commercial Clothes Washers	10 CFR § 429.46, which references 10 CFR § 429.11

B. When testing clothes washers, the following test methods shall be used to determine ENERGY STAR qualification:

Table 3: Test Methods for ENERGY STAR Qualification

Efficiency Requirement	Test Method Reference
MEF	10 CFR § 430, Subpart B, Appendix J1 ¹
WF	

¹ And in accordance with any applicable DOE issued test procedure guidance, listed here: <http://www1.eere.energy.gov/guidance/default.aspx?pid=2&spid=1>

5) **Effective Date:** The ENERGY STAR Clothes Washer specification shall take effect on **February 1, 2013**. 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 (e.g., month and year) on which a unit is considered to be completely assembled.

Note: The effective date has been moved to February 1, 2013, to allow sufficient time to transition product labels and materials.

6) **Future Criteria Revisions:** ENERGY STAR 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.

Note: *Combo W/Ds:* As noted in Draft 2, EPA plans to review and revise the ENERGY STAR criteria for all residential clothes washers later in 2012. This presents an opportunity for EPA to further consider establishing minimum performance requirements for combo W/Ds. EPA believes it is important that any new minimum performance requirements for combo W/Ds address both the energy and the water use during drying. To support further consideration, EPA is seeking feedback on the following items: 1) the technical feasibility and cost-effectiveness of designs that reduce the amount of water required by air-water heat exchangers; 2) any benefits (e.g., consumer value, energy efficiency) associated with designs that use water-cooled condensers; and, 3) information on market trends for different combo W/D configurations (vented vs. ventless; air-cooled vs. water-cooled condensers).

Washers with an Optional Dry Cycle: EPA has excluded residential washers with an optional dry cycle from Version 6.0, but is open to re-evaluating potential inclusion through a future specification revision process once testing requirements that address the full-performance (washing and drying) have been determined. DOE and EPA are not planning to develop an ENERGY STAR test procedure specifically for washers with an optional dry cycle, but would look to leverage testing requirements available (e.g., tailored testing requirements provided through a waiver from DOE), as appropriate, for ENERGY STAR program purposes.

Within the context of the Appliances and Commercial Equipment Standards Program, DOE notes that the dryer function of a clothes washer with an optional dry cycle was not explicitly contemplated in either the DOE standards or test procedure rulemakings but that this alone does not exclude them from coverage as clothes dryers. However, DOE believes the characteristics of a clothes washer with an optional dry cycle may preclude them from testing using the clothes dryer test procedure, Appendix D1. (This is consistent with the feedback EPA has received from the stakeholder who has indicated that they have plans to introduce this type of product to the U.S. market.) As a result, DOE may need to further consider how to address this type of product within its Appliances and Commercial Equipment Standards Program.

Stakeholders are encouraged to consult with DOE to further determine coverage and testing requirements for a clothes washer with an option dry cycle.