



ENERGY STAR® Program Requirements Product Specification for Dehumidifiers

Eligibility Criteria Final Draft: Version 4.0

Following is the **Final Draft Version 4.0** product specification for ENERGY STAR certified dehumidifiers. 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. **Dehumidifier:** A self-contained, electrically operated, and mechanically refrigerated encased assembly consisting of: (a) a refrigerated surface (evaporator) that condenses moisture from the atmosphere; (b) a refrigerating system, including an electric motor; (c) an air-circulating fan; and (d) means for collecting or disposing of the condensate¹.
- a. **Stand Alone:** Portable unit designed to provide dehumidification within the confined living space where it is placed and plugged into an electrical outlet.
- b. **Whole House:** Unit designed to be incorporated into the home's HVAC system, or installed with its own duct system, providing dehumidification for all conditioned spaces within the building enclosure.
- B. **Capacity**²: A measure of the ability of a dehumidifier to remove moisture from its surrounding atmosphere, measured in pints collected per 24 hours of continuous operation. Capacity shall be measured according to the test standard referenced in Section 4, below.
- C. **Energy Factor (EF)**²: A measure of energy efficiency of a dehumidifier calculated by dividing the water removed from the air by the energy consumed, measured in liters per kilowatt hour (L/kWh). EF shall be calculated according to the test standard referenced in Section 4, below.
- D. **Basic Model Group**¹: All units of a given type of 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.

2) **Scope:**

- A. **Included Products:** Products that meet the definition of a dehumidifier as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B. Stand alone and whole house units with capacities measuring less than or equal to 185 U.S. pints (87.5 liters) are eligible for ENERGY STAR.
- B. **Excluded Products:** Dehumidifiers with daily water-removal capacities greater than 185 U.S. pints (87.5 liters) are not eligible for ENERGY STAR.

3) **Qualification Criteria:**

- A. **Energy Efficiency Requirements:** To qualify for ENERGY STAR, dehumidifiers shall meet the EF requirements provided in Table 1, below.

¹ 10 CFR Subpart A of Part 430

² 10 CFR Appendix X to Subpart B of Part 430

Table 1: Performance Criteria for ENERGY STAR Certified Dehumidifiers

Product Capacity (Pints/Day)	Energy Factor Under Test Conditions (L/kWh)
< 75	≥ 2.00
$75 \leq 185$	≥ 2.80

Note: EPA received no concerns about the proposed levels and they remain unchanged from Draft 1. One commenter noted that the term “immediate payback”, used to explain the Draft 1 proposal, was not clear. Immediate payback means that there is a selection of models that meet the proposed levels at price points equal to or even below models that do not meet the proposed levels, such that consumers will begin saving money through reduced energy costs right away.

B. Other Requirements:

Qualifying units shall be equipped with an adjustable humidistat control or shall require a remote humidistat control to operate.

C. Significant Digits and Rounding:

- All calculations shall be carried out with directly measured (unrounded) values.
- Unless otherwise specified in this specification, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.
- 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.

4) **Test Requirements:**

A. One of the following sampling plans shall be used for purposes of testing for ENERGY STAR certification:

- A single unit is selected, obtained, and tested. The measured performance of this unit and of each subsequent unit manufactured must be equal to or better than the ENERGY STAR specification requirements. Results of the tested unit may be used to certify additional individual model variations within a basic model group as long as the definition for basic model group provided in Section 1, above, is met; or
- Units are selected for testing and results calculated according to the sampling requirements defined in 10 CFR Part 429, Subpart B § 429.36. The certified rating must be equal to or better than the ENERGY STAR specification requirements. Results of the tested unit may be used to certify additional model variations within a basic model group as long as the definition for basic model group provided in Section 1, above, is met. Further, all individual models within a basic model group must have the same certified rating based on the applicable sampling criteria this rating must be used for all manufacturer literature, the qualified product list, and certification of compliance to DOE standards.

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

Table 2: Test Methods for ENERGY STAR Qualification	
ENERGY STAR Requirement	Test Method Reference
Capacity and Energy Factor	10 CFR Appendix X to Subpart B of Part 430

Note: EPA is aware of the new federal test method, Appendix X1, and will adopt it in the next revision (Version 5.0), which will be based on the new metric and respond to the new federal minimum standards. All commenters supported the proposed use of the current test method, (Appendix X), and the current metric (EF), for this Version 4.0 specification.

- 5) Effective Date:** This ENERGY STAR Dehumidifier Specification shall take effect on **October 25, 2016**. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the 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.

Note: The proposed effective date reflects EPA's plan to finalize this Version 4.0 specification in the last week of January 2016. The proposed effective date will allow manufacturers time to update product literature and other marketing materials for those products that no longer meet ENERGY STAR requirements. EPA received a comment requesting an unusually long delay until the effective date, in light of the considerable effort dehumidifier manufacturers will need to invest to be ready for the upcoming change to the federal test method and federal minimum metric. While EPA recognizes that the federal standards will be changing, the Agency has proposed a reasonable increase in the stringency of the ENERGY STAR requirements and has referenced the current federal test method which is familiar to partners. EPA believes that this proposal strikes the right balance between providing a prompt response to the current high market share of ENERGY STAR dehumidifiers and considering the competing priorities for partners. For these reasons, EPA proposes an effective date reflecting our usual transition period for manufacturers.

- 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.