ENERGY STAR® Program Requirements
Product Specification for Dehumidifiers

Eligibility Criteria
Final Draft Version 5.0

Following is the Final Draft Version 5.0 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. Where noted below, definitions are identical to the definitions in the U.S Department of Energy (DOE) test procedure at 10 Code of Federal Regulations (CFR) 430, Subpart B, Appendix X1 or in 10 CFR 430.2. The definitions from the CFR have been reprinted for ease of use; however, the CFR definitions take precedence and may be modified by DOE.

A. Dehumidifier: A product, other than a portable air conditioner, room air conditioner, or packaged terminal air conditioner, that is a self-contained, electrically operated, and mechanically 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 condensate.

   a. Portable Dehumidifier: A dehumidifier designed to operate within the dehumidified space without the attachment of additional ducting, although means may be provided for optional duct attachment.

   b. Whole-home Dehumidifier: A dehumidifier designed to be installed with ducting to deliver return process air to its inlet and to supply dehumidified process air from its outlet to one or more locations in the dehumidified space.

B. Product Capacity: A measure of the ability of a dehumidifier to remove moisture from its surrounding atmosphere, measured in pints collected per 24 hours of operation under the specified ambient conditions. Product Capacity shall be measured according to the test standard referenced in Section 4, below.

C. Product Case Volume: For whole-home dehumidifiers, this is a measure of the rectangular volume that the product case occupies, exclusive of any duct attachment collars or other external components.

D. Integrated Energy Factor (IEF): A measure of energy efficiency of a dehumidifier calculated by dividing the corrected product capacity with unit and test time adjustments by the summation of the energy consumed during the 6-hour dehumidification mode test and the annual low-power mode with an applied conversion factor, expressed in liters per kilowatt hour (L/kWh). IEF shall be calculated according to the test standard referenced in Section 4, below.

E. Basic Model: 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.

Note: EPA has added the definition for product case volume, per 10 CFR 430, Subpart B, Appendix X1, which represents the physical size of whole-home dehumidifiers.

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 2B.

B. Excluded Products: Dehumidifiers with product capacities greater than 155 U.S. pints/day (73.34 liters/day) are not eligible for ENERGY STAR.

Note: EPA has removed the exclusion of portable dehumidifiers with product capacities greater than 50.00 pints/day. The reasoning for this change in scope was outlined in detail in the Limited Topic Proposal that EPA released on November 26, 2018, and all commenters supported the change.

3) Certification Criteria:

A. Energy Efficiency Requirements: To qualify for ENERGY STAR, dehumidifiers shall meet the IEF requirements provided in Table 1 and Table 2, below.

Table 1: Performance Criteria for ENERGY STAR Certified Portable Dehumidifiers

Product Capacity (Pints/Day)	Integrated Energy Factor Under Test Conditions (L/kWh)
≤ 25.00	≥ 1.57
25.01 to 50.00	≥ 1.80
≥ 50.01	≥ 3.30

Table 2: Performance Criteria for ENERGY STAR Certified Whole-home Dehumidifiers

Product Case Volume (ft^3)	Integrated Energy Factor Under Test Conditions (L/kWh)
≤ 8.0	≥ 2.09
> 8.0	≥ 3.30

Note: Dehumidifiers with the ability to operate as both a portable and whole-home dehumidifier, by means of installation or removal of an optional ducting kit, shall meet requirements under both configurations to be certified.

Note: EPA is including portable dehumidifiers ≥50.01 pints/day in this Final Draft specification with IEF criteria of 3.30 L/kWh, as proposed in the Limited Topic Proposal. Comments on the Limited Topic Proposal were generally supportive, though one commenter suggested that this category should be further split based on product case volume to allow for more lenient IEF criteria for smaller dehumidifiers in this category, such as those designed for crawlspaces. While EPA understands that such a distinction would allow for a wider selection of certified small, high-capacity dehumidifiers, the current product classifications will allow consumers sufficient choice of products by the time the specification is effective. In addition, it preserves significant savings over the DOE standard, and minimizes market confusion by using the same product classifications as DOE. Thus, EPA will not split the category.

EPA has also reduced the IEF criteria for whole-home dehumidifiers with case volumes larger than 8 ft^3 from 3.52 L/kWh in the Draft 1 specification to 3.30 L/kWh in this Final Draft specification, also as proposed in the Limited Topic Proposal. EPA received no adverse comments on this proposal.

B. Other Requirements:

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

4) Test Requirements:

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

a. 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. Note that to determine the represented value per 10 CFR 429.36, additional testing outside of ENERGY STAR is required. The represented value must also be equal to or better than the ENERGY STAR specification requirements; or

b. At least two units are selected, obtained and tested. The represented value is calculated from the test results according to the sampling requirements defined in 10 CFR 429.36. The represented value must be equal to or better than the ENERGY STAR specification requirements.

Results of the tested unit(s) may be used to certify additional individual model variations within a Basic Model as long as the definition for Basic Model provided in Section 1, above, and in 10 CFR 430.2 is met.

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

Table 3: Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
Product Capacity, Product Case Volume, and Integrated Energy Factor (IEF)	10 CFR 430, Subpart B, Appendix X1 OR DOE-approved test procedure waiver pursuant to 10 CFR 430.27

C. Represented Value: The represented value is the identical value certified to DOE, listed on the ENERGY STAR QPL, and shown on consumer facing materials.

D. For the purpose of ENERGY STAR certification, the performance of efficient variable speed dehumidifiers shall require a test procedure waiver from DOE per 10 CFR 430.27.

E. Significant Digits and Rounding: All calculations shall be carried out as specified in 10 CFR 430, Subpart B, Appendix X1 and 10 CFR 430.23(z). Do not round individual test results. Rounding is specified in 10 CFR 429.36 for the represented value.

5) Effective Date:

The ENERGY STAR Version 5 Dehumidifier Specification shall take effect on **October 18, 2019**. To certify 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: EPA received a comment on the Limited Topic Proposal to push the anticipated effective date to early 2020, rather than the fall of 2019. EPA is maintaining its proposed timeline with an effective date of October 18, 2019 to be consistent with product design and sales cycles as well as ensure an effective date nearer to the DOE compliance date of June 13, 2019.

EPA is on track to finalize this specification revision in January 2019. Once this specification is finalized, brand owners may work with their respective certification body to certify products to it immediately, using the Appendix X1 test method or the interim waiver process for variable speed dehumidifiers. Products that are

currently certified will remain on the list of certified products until the effective date of the Version 5 specification, at which point only those dehumidifiers certified to Version 5 will be listed.

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 certification is not automatically granted for the life of a product model. EPA in interested in the following considerations for future specification revisions:

A. Dehumidifiers are tested under steady state conditions, now including periods of off-cycle and inactive/off time. However, in real situations, dehumidifiers with humidistats typically cycle on and off. EPA continues to be interested in any data showing technologies with superior performance in these real-world conditions.

B. EPA is aware that there are Wi-Fi dehumidifiers on the market now. EPA will continue to watch this trend and is particularly interested to see whether consumers are interested in these devices. If they gain any significant market presence, EPA anticipates including optional connected criteria in a future revision.