



ENERGY STAR® Program Requirements Product Specification for Residential Ceiling Fans

Eligibility Criteria

DRAFT Version 3.0

Following is the **DRAFT Version 3.0** product specification for ENERGY STAR qualified residential ceiling fans. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

Note: EPA recently updated the ceiling fan specification to support upcoming ENERGY STAR program changes effective January 1, 2011. A note box was included in the Final Version 2.4 specification that conveys EPA's plans to adopt the ENERGY STAR Version 1.0 Luminaires specification for purposes of ceiling fan light kit qualification. As such, Appendix A has been removed from this Version 3.0 document and Section 3B now references the Version 1.0 Luminaires specification. Stakeholders are encouraged to review Final Draft Version 1.0 Luminaires specification and comment on feasibility and timing for ceiling fan light kits. The Final Draft Version 1.0 Luminaires document is available on the ENERGY STAR website at: www.energystar.gov/luminaires.

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

- A. **Residential Ceiling Fan:** A non-portable device designed for home use that is suspended from the ceiling for circulating air via the rotation of fan blades. Some ceiling fans also have an integral or attachable light kit.
- B. **Light Kit:** A complete lighting unit consisting of lamp(s) and ballasting (when applicable) or LED Light Engine(s), together with the parts designed to distribute the light, position and protect the light sources, and connect the sources to the mains. Light kits can be:
 - Integral – the light kit is attached to the ceiling fan housing at the time of purchase. This type of a light kit is integrated into the bottom cap of the fan and cannot be removed or replaced with another light kit.
 - Attachable – the light kit is not, at the time of sale, physically attached to the fan. The light kit shall be attached to the ceiling fan for the lights to work. Attachable light kits might be included inside the ceiling fan box at the time of sale or sold separately for subsequent attachment to the fan.
- C. **Controls:** Controls enable the user to turn on/off or adjust the lighting and fan movement. Controls may be in the form of pull chain, slide switch, wall switch/panel, or remote control.
- D. **Airflow:** The rate of air movement at a specific fan setting expressed in cubic feet per minute (CFM).
- E. **Airflow Efficiency:** The ratio of airflow divided by power at a specific residential ceiling fan setting expressed in CFM per watt (CFM/watt).
- F. **Power Consumption:** Defined as the active power and expressed in watts.
- G. **Hugger Fan:** A fan style where the motor mounts directly to the ceiling. Hugger fans are most commonly used in rooms with low ceilings. Hugger fans are manufactured and marketed as such and should not be confused with multi-mount (traditional) fans that can be hung without the down rod, giving the same effect as a hugger fan. Hugger fans are designed to allow installations on

7'6" – 8' height ceilings when using a fan light kit in a location where walking under the fan will occur.

- H. Product Family: Ceiling fan models are identical in every respect, with the exception of finish. Differences that would require separate testing include, but may not be limited to: motor type or size; rotational speed; control type; blade weight, number, size, or pitch; and housing (i.e., size, design, ventilation). Light kits are required to meet the product family definition provided in the ENERGY STAR Luminaires specification.

2) Scope:

- A. Included Products: Products that meet the definitions of a Residential Ceiling Fan and/or Light Kit as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B.
- B. Excluded Products: Hugger fans, as defined above, are not eligible for ENERGY STAR.

3) Qualification Criteria:

- A. Airflow Efficiency Requirements:

Table 1: Air Flow Efficiency Requirements		
Fan Speed	Minimum Airflow	Minimum Efficiency Requirement
Low	1,250 CFM	155 CFM/watt
Medium	3,000 CFM	100 CFM/watt
High	5,000 CFM	75 CFM/watt

- a. Qualifying products shall meet or exceed the minimum requirements presented in Table 1, above, when operating in a downward-blowing direction.
- b. Efficiency shall be measured on each of three fan speeds (i.e., low, medium, high). For those ceiling fan models that offer more than three speeds manufacturer may choose the three individual speed settings (representative of low, medium, and high) that should be used to comply with the performance levels set forth in Table 1, above.
- B. Lighting Requirements: To qualify for ENERGY STAR, all ceiling fans shipped with integral or attachable light kits shall meet the requirements found in the *ENERGY STAR Program Requirements: Eligibility Criteria for Luminaires* in effect at the time of qualification. Non-directional light kits (e.g. with a single bowl-shaped glass) are subject to non-directional performance requirements in the Luminaires specification, and directional light kits (e.g. with user-adjustable heads creating a distinct beam) are subject to directional performance requirements. Further guidance is provided at the beginning of the Luminaires specification. Ballast or driver case temperature testing shall be conducted with the ceiling fan turned off.

Qualifying residential ceiling fans sold without integral or attachable light kits shall provide information on product packaging or with product instructions regarding ENERGY STAR qualifying light kits that may be used with that particular residential ceiling fan.

Note: The reference to Appendix A above has been replaced by the ENERGY STAR Luminaires specification, which will serve as the new source for ceiling fan light kit qualification requirements. Light kits will be required to meet either the non-directional or directional performance requirements, depending on light kit design. Non-directional and directional light sources are further defined in the ENERGY STAR Luminaires specification.

- C. Controls: Qualifying products shall permit convenient consumer adjustment of fan speed. This may be accomplished by means of one or more wall-mounted switch(es), a remote control, or

readily accessible pull chains. For purposes of this specification, “readily accessible” shall be defined as a length sufficient to reach a height of no more than 80 inches (203 cm) above the floor when the residential ceiling fan is mounted according to the residential ceiling fan’s installation instructions. For those residential ceiling fans that can accommodate light kits, the lights and the fans shall be able to be controlled separately, allowing users to switch off lights during fan operation or operate the lights without using the residential ceiling fan.

Qualifying products shall also provide for consumer adjustment of airflow direction (upward or downward) by one of the following means:

- A vertically or horizontally mounted slide switch on the motor housing. For vertically mounted switches, the downward position shall correspond to downward airflow. For horizontally mounted switches, airflow direction shall be clearly identified on the switch housing or within the product literature.
- A wall-mounted switch
- A remote control
- A readily accessible pull chain

- D. Minimum Warranty: Qualifying products shall provide a warranty of at least 30 years for the motor and at least one year for all other components of qualifying residential ceiling fans. Light kit warranty requirements are provided in the ENERGY STAR Luminaires specification.

Note: The existing Version 2.4 specification references Appendix A for light kit warranty requirements. EPA is proposing that ceiling fan light kits meet the minimum warranty requirement proposed in the Version 1.0 Luminaires specification, which is three years. This warranty period matches current LED light kit requirements but represents a change to the fluorescent minimum warranty requirement, which is currently two years.

- E. 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 limit shall be evaluated using exact values without any benefit from rounding.

4) Test Requirements:

- A. Representative Models shall be selected for testing per the following requirements:
 - a. For qualification of an individual product model, the representative model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR.
 - b. For qualification of a product family, any model within that product family can be tested and serve as the representative model.
- B. When testing residential ceiling fans, 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
Airflow and Airflow Efficiency	ENERGY STAR Testing Facility Guidance Manual Version 1.2: <i>Building a Testing Facility and Performing the Solid State Test Method for ENERGY STAR Qualified Ceiling Fans</i>
Lighting Requirements	See <i>ENERGY STAR® Program Requirements for Luminaires - Eligibility Criteria</i>

- a. At time of testing, measurements shall be taken at all discrete operating speeds.
- b. Products shipped with light kits shall be tested with those light sources mounted in their intended position and switched off.

Note: A reference to the ENERGY STAR Luminaires specification has been added to Table 2, above, for purposes of testing and qualifying ceiling fan light kits. The version number is not included since test standard references could change depending on specification versioning and qualifying light kits will be required to meet the specification in effect at the time of manufacturing.

- 5) Effective Date:** The ENERGY STAR Residential Ceiling Fan Version 3.0 specification shall take effect on **October 1, 2011**. 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: To align with the ENERGY STAR Version 1.0 Luminaires specification effective date, EPA is proposing that this Version 3.0 specification take effect on October 1, 2011. As of this date, all ceiling fan light kits will be required to meet the Version 1.0 Luminaires specification requirements to qualify for ENERGY STAR. In addition to meeting the performance requirements, *existing and new* ceiling fan light kits will also need to be third-party certified by an EPA-recognized Certification Body to appear on the ENERGY STAR Qualified Product list.

- 6) Future Specification Revisions:** EPA reserves the right to change this 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.