



ENERGY STAR® Program Requirements Product Specification for Commercial Fryers

Eligibility Criteria Final Draft Version 3.0

Following is the **Final Draft Version 3.0** product specification for commercial fryers. 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. **Commercial Open, Deep-Fat Fryer:** An appliance, including a cooking vessel, in which oils are placed to such a depth that the cooking food is essentially supported by displacement of the cooking fluid rather than by the bottom of the vessel. Heat is delivered to the cooking fluid by means of an immersed electric element or band-wrapped vessel (electric fryers), or by heat transfer from gas burners through either the walls of the fryer or through tubes passing through the cooking fluid (gas fryers).
 - a. **Standard Fryer:** A fryer with a vat that measures ≥ 12 inches and < 18 inches wide, and a shortening capacity ≥ 25 pounds and ≤ 65 pounds.
 - b. **Large Vat Fryer:** A fryer with a vat that measures ≥ 18 inches and ≤ 24 inches wide, and a shortening capacity > 50 pounds.
 - c. **Split Vat Fryer:** A standard or large vat fryer with an internal wall that separates the vat into two equal sides.
- B. **Cooking Energy Efficiency:** The quantity of energy input to the food product (i.e., french fries) during the cooking process, expressed as a percentage of the quantity of energy input to the fryer during the heavy-load tests.
- C. **Idle Energy Rate:** The average rate of energy consumed [Btu/h (kJ/h) or kW] by the fryer while "holding" or "idling" the frying medium at the thermostat(s) set point.
- D. **Product Family:** Variations of one model are offered within a single product line with differences in aesthetics only. Individual models represented by a product family must be based on the same basic engineering design and have the same cooking energy efficiency and idle energy rate. All members of the family must also have the same fry pot size.

2) **Scope:**

- A. **Included Products:** Products that meet the definition of a Commercial Open Deep-Fat Fryer as specified herein are eligible for ENERGY STAR certification, with the exception of products listed in Section 2.B. Countertop, floor type, and drop-in designs are eligible to qualify for ENERGY STAR.
- B. **Excluded Products:** Fryers with vats measuring < 12 inches wide, or > 24 inches wide, are not eligible for ENERGY STAR.

3) Qualification Criteria:

- A. Determining Fry Pot Size: The frying area shall be measured at the fryer’s maximum fill-line. The fry pot width is considered to be the distance between the inner side walls of the frypot. The dimensions for split vat fryers shall be considered to be twice the width of one side. For kettle fryers, the frying area shall be measured at the fryer’s maximum fill-line using the diameter of the cylinder and determined by the inner walls.
- B. Cooking Energy Efficiency and Idle Energy Rate Requirements – Standard Fryers

Table 1: Energy Efficiency Requirements for Standard Open Deep-Fat Gas Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 50%
Idle Energy Rate	≤ 9,000 Btu/hr

Table 2: Energy Efficiency Requirements for Standard Open Deep-Fat Electric Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 83%
Idle Energy Rate	≤ 800 watts

- C. Cooking Energy Efficiency and Idle Energy Rate Requirements – Large Vat Fryers

Table 3: Energy Efficiency Requirements for Large Vat Open Deep-Fat Gas Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 50%
Idle Energy Rate	≤ 12,000 Btu/hr

Table 4: Energy Efficiency Requirements for Large Vat Open Deep-Fat Electric Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 80%
Idle Energy Rate	≤ 1,100 watts

Note: Split-vat cooking-energy efficiency and idle rate performance shall be measured with both sides operating.

Note: EPA reviewed stakeholder comments and conducted extensive outreach to manufacturers on the previous Draft 1 proposal for electric standard vat fryers and in response has adjusted the minimum cooking energy efficiency level from 85% to 83%. Approximately 19% of base models currently available in the U.S. marketplace meet the cooking energy efficiency and idle levels proposed in Table 2. Idle energy is the main driver of daily and annual energy consumption in fryers and many of the models listed between 83 – 84% cooking energy-efficiency, either idle below or slightly above 800 watts. Some manufacturers shared concerns about cost effectiveness when working to redesign fryers to meet the 85% cooking energy efficiency requirement, compared to the low cost incurred of improving idle energy by adding insulation to the frypot, which could reduce energy consumption by as much as 25%. Setting the cooking energy-efficiency level at 83% provides end users with greater product selection, including low oil volume units which provide additional cost saving benefits to foodservice establishments. EPA has retained the 800-watt idle level to recognize top performing equipment and encourage stakeholders to integrate insulation or other energy saving design approaches. Electric standard vat fryers that meet the Final Draft performance levels are about 17% more efficient than standard models, using assumptions provided by the PG&E Food Service Technology Center (FSTC) of 75% cooking energy efficiency and 1,200 watts in idle, which equates to more than \$300 in utility bill savings annually.

Note cont.

Based on discussions with manufacturers, EPA believes the cost of insulation ranges from \$20 – 60 per fryer. Given the addition of insulation can reduce energy consumption by as much as 25%, the Agency believes customers will see the payback on this investment within the first 2 years of ownership, and benefit from these additional savings throughout the life of the product. Lastly, EPA's review of fryer pricing information provided in AutoQuotes indicates that purchasers will have the choice of models that allow them to recover their investment in ENERGY STAR certified equipment within just a few years.

D. Significant Digits and Rounding:

- a. All calculations shall be carried out with directly measured (unrounded) values.
- b. Unless otherwise specified below, 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.

4) Test Criteria:

A. Representative Models shall be selected for testing per the following requirements:

- a. For certification 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 certification of a product family, any model within that product family can be tested and serve as the representative model.

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

Table 5: Test Methods for ENERGY STAR Certification	
ENERGY STAR Requirement	Test Method Reference
Cooking Energy Efficiency	Standard Fryers: ASTM Standard F1361-07 (2013), <i>Test Method for Performance of Open Deep Fat Fryers</i>
Idle Energy Rate	Large Vat Fryers: ASTM Standard F2144-09, <i>Test Method for Performance of Large Open Vat Fryers</i>

- 5) Effective Date:** The ENERGY STAR Commercial Fryer specification shall take effect on **October 1, 2016**. To certify 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.

Note: EPA anticipates finalizing this Version 3.0 specification by the end of this year. Manufacturers will then have at least 9 months to take steps to transition, including updating marketing materials, as needed. Once the specification takes effect, fryers that do not meet the Version 3.0 criteria will be removed from the ENERGY STAR QPL and may no longer be labeled or marketed as ENERGY STAR. Once a final specification is released, manufacturers may immediately begin certifying products to the new Version 3.0 specification.

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. Please note that ENERGY STAR certification is not automatically granted for the life of the product model.