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# High Efficiency Specifications for Commercial Fryers

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Terms and Conditions of Use

## Efficiency Requirements for Qualifying Products

| Equipment | Corresponding Base Specification | Heavy Load (French Fry) Cooking Energy Efficiency | Idle Energy Rate |
|---|---|---|---|
| Natural Gas Standard Open, Deep-Fat Fryers | ENERGY STAR® | ≥ 50% | ≤ 9,000 Btu/hr |
| Electric Standard Open, Deep-Fat Fryers | ENERGY STAR® | ≥ 80% | ≤ 1,000 watts |
| Natural Gas Large Vat Open, Deep-Fat Fryers | ENERGY STAR® | ≥ 50% | ≤ 12,000 Btu/hr |
| Electric Large Vat Open, Deep-Fat Fryers | ENERGY STAR® | ≥ 80% | ≤ 1,100 watts |

## Definitions

A. Commercial Open, Deep-Fat Fryer: An appliance, including a cooking vessel, in which oil is 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-, medium-, and light-load tests. For purposes of this specification, the heavy-load

test as defined in ASTM F1361 and ASTM F2144 will be used as a measurement of cooking energy efficiency.

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.

## Qualifying Products

A. Included Products: Products that meet the definition of a Commercial Open Deep-Fat Fryer as specified herein are eligible for qualification, with the exception of products listed in the excluded products section below. Countertop and floor type designs are eligible to qualify.

B. Excluded Products: Fryers with vats measuring < 12 inches wide, or > 24 inches wide, are not eligible for qualification.

C. Determining Fry Pot Size: The frying area shall be measured at the fryer's maximum fill-line. The frypot 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.

D. 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.

E. Maintenance of a Qualifying Products List

CEE will develop a qualifying products list by collecting third-party certified or verified performance data from other organizations rather than requiring manufacturers to submit performance data directly to CEE. All third-party certified or verified data sources will be cited on each qualifying products list published quarterly, including organization name and date. Manufacturers not participating in any third-party programs, such as ENERGY STAR® or similar programs are strongly encouraged to do so. If this is not an option, please contact CEE.

## Test Methods and Reporting

In measuring cooking energy efficiency and idle energy rate, the following test methods must be used: American Society for Testing and Materials (ASTM) F1361, *Test Method for Performance of Open, Deep-Fat Fryers (standard fryers)* OR ASTM F2144, *Test Method for Performance of Large Open Vat Fryers (large vat fryers)*.

## Future Specification Revisions

CEE reserves the right to revise this specification as appropriate.