

## High Efficiency Specifications for Commercial Dishwashers

Effective Date 06/26/2008  
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### Efficiency Requirements for Qualifying Products

Equipment	Corresponding Base Specification	High Temperature Efficiency Requirements***		Low Temperature Efficiency Requirements***	
		Idle Energy Rate*	Water Consumption	Idle Energy Rate*	Water Consumption
Under Counter	ENERGY STAR®	<= 0.90 kW	<= 1.00 gal/rack	<= 0.5 kW	<= 1.70 gal/rack
Stationary Single Tank Door**	ENERGY STAR	<= 1.0 kW	<= 0.950 gal/rack	<= 0.6 kW	<= 1.18 gal/rack
Single Tank Conveyor	ENERGY STAR	<= 2.0 kW	<= 0.700 gal/rack	<= 1.6 kW	<= 0.790 gal/rack
Multiple Tank Conveyor	ENERGY STAR	<= 2.6 kW	<= 0.540 gal/rack	<= 2.0 kW	<= 0.540 gal/rack

\* Idle energy rate as measured with door closed and rounded to 2 significant digits.

\*\* Includes pot, pan, and utensil machines.

\*\*\* Machines designed to be interchangeable in the field from high temp to low temp, and vice versa, must meet both the high temp and low temp requirements to qualify.

### Definitions

A. **Dishwasher:** A machine designed to clean and sanitize plates, glasses, cups, bowls, utensils, and trays by applying sprays of detergent solution (with or without blasting media granules) and a sanitizing final rinse.

B. **Under Counter Dishwasher:** A machine with an overall height 38 inches or less, in which a rack of dishes remains stationary within the machine while being subjected to sequential wash and rinse sprays, and is designed to be installed under food preparation workspaces. Under counter dishwashers can be either chemical or hot water sanitizing, with an internal booster heater for the latter. For purposes of this specification, only those machines designed for wash cycles of 10 minutes or less can qualify.

C. **Stationary Rack, Single Tank, Door Type Dishwasher:** A machine in which a rack of dishes remains stationary within the machine while subjected to sequential wash and rinse sprays. This definition also applies to machines in which the rack revolves on an axis during the wash and rinse cycles. Subcategories of stationary door type machines include: single and multiple wash tank, double rack, pot, pan and utensil washers, chemical dump type and hooded wash compartment ("hood type"). Stationary rack, single tank, door type models are covered by this specification and can be either chemical or hot water sanitizing, with an internal or external booster heater for the latter.

D. Single Tank Conveyor Dishwasher: A dishwasher that employs a conveyor or similar mechanism to carry dishes through a series of wash and rinse sprays within the machine. Specifically, a single tank conveyor machine has a tank for wash water followed by a final sanitizing rinse and does not have a pumped rinse tank. This type of machine may include a prewashing section before the washing section. Single tank conveyor dishwashers can be either chemical or hot water sanitizing, with an internal or external booster heater for the latter.

E. Multiple Tank Conveyor Dishwasher: A conveyor type dishwasher that has one or more tanks for wash water and one or more tanks for pumped rinse water, followed by a final sanitizing rinse. This type of machine may include one or more pre-washing sections before the washing section. Multiple tank conveyor dishwashers can be either chemical or hot water sanitizing, with an internal or external booster heater for the latter.

F. Hot Water Sanitizing (High Temp) Machine: A dishwasher that applies potable hot water to the surfaces of wares to achieve sanitization.

G. Chemical Sanitizing (Low Temp) Machine: A dishwasher that applies potable water and a chemical sanitizing solution to the surfaces of wares to achieve sanitization.

## Test Methods

Manufacturers are required to perform tests and self-qualify those product models that meet the CEE guidelines. In measuring water consumption and idle energy rate, the following test standards must be used:

- (1) Water Consumption: NSF/ANSI 3-2007 Standard, *Commercial Warewashing Equipment*. All machines must be certified to NSF/ANSI 3 by a third party laboratory capable of testing to the above referenced test procedure.
- (2) Idle Energy Rate for Hot Water and Chemical Sanitizing Undercounter and Stationary Rack Single Tank Door-Type Dishwashers: ASTM Standard F1696, *Standard Test Method for Energy Performance of Single-Rack Hot Water Sanitizing, Door-Type Commercial Dishwashing Machines*.
- (3) Idle Energy Rate for Hot Water and Chemical Sanitizing Single and Multiple Tank Rack Conveyor Dishwashers: ASTM Standard F1920, *Standard Test Method for Energy Performance of Rack Conveyor, Hot Water Sanitizing, Commercial Dishwashing Machines*.

Although the titles of the ASTM test procedures listed above specifically call out hot water sanitizing machines the idle energy rate portion is also applicable, and should be used, for chemical sanitizing machines.

## Future Specification Revisions

CEE reserves the right to revise the specification as appropriate. CEE plans to review this specification as more data on idle energy use becomes available. CEE also plans to review this specification once the revision processes for ASTM F1696 and ASTM F1920 are complete. These test methods will address energy consumption in various modes of operation as well as water consumption.