# ENERGY STAR® Program Requirements for Commercial Dishwashers

## Partner Commitments

Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacture and labeling of ENERGY STAR qualified products. The ENERGY STAR Partner must adhere to the following partner commitments:

### Qualifying Products

1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and test procedures for commercial dishwashers. A list of eligible products and their corresponding Eligibility Criteria can be found at www.energystar.gov/specifications.
2. **Prior to associating the ENERGY STAR name or mark with any product**, obtain written certification of ENERGY STAR qualification from a Certification Body recognized by EPA for commercial dishwashers. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform commercial dishwasher testing. A list of EPA-recognized laboratories and Certification Bodies can be found at www.energystar.gov/testingandverification.

### Using the ENERGY STAR Name and Marks

3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
4. Use the ENERGY STAR name and marks only in association with qualified products. Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is qualified and offered for sale in the U.S. and/or ENERGY STAR partner countries.
5. Provide clear and consistent labeling of ENERGY STAR qualified commercial dishwashers. The ENERGY STAR mark must be clearly displayed on the top/front of the product, in product literature (i.e., user manuals, spec sheets, etc.), on product packaging, and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed.

### Verifying Ongoing Product Qualification

6. Participate in third-party verification testing through a Certification Body recognized by EPA for commercial dishwashers, providing full cooperation and timely responses. EPA/DOE may also, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at the government's request.

### Providing Information to EPA

7. Provide unit shipment data or other market indicators to EPA annually to assist with creation of ENERGY STAR market penetration estimates, as follows:

    7.1. Partner must submit the total number of ENERGY STAR qualified commercial dishwashers shipped in the calendar year or an equivalent measurement as agreed to in advance by EPA and Partner. Partner shall exclude shipments to organizations that rebrand and resell the shipments (unaffiliated private labelers).

7.2. Partner must provide unit shipment data segmented by meaningful product characteristics (e.g., type, capacity, presence of additional functions) as prescribed by EPA.

7.3. Partner must submit unit shipment data for each calendar year to EPA or an EPA-authorized third party, preferably in electronic format, no later than March 1 of the following year.

Submitted unit shipment data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner.

8. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence testing or certification results or to engage in discriminatory practices.

9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

**Performance for Special Distinction**

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed on the progress of these efforts:

- Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program.
- Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If information concerning ENERGY STAR is provided on the Partner website as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR website), EPA may provide links where appropriate to the Partner website.
- Ensure the power management feature is enabled on all ENERGY STAR qualified displays and computers in use in company facilities, particularly upon installation and after service is performed.
- Provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified products.
- Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, and communicate Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list of planned activities or milestones of which Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR qualified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) providing information to users (via the website and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption,

greenhouse gases, and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.

- Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune 500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.

# ENERGY STAR® Program Requirements
# Product Specification for Commercial Dishwashers

## Eligibility Criteria
## Version 1.2

Following is the **Version 1.2** product specification for ENERGY STAR qualified commercial dishwashers. 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. Dishwashing Machine: 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.

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 can be either chemical or hot water sanitizing, with an internal or external booster heater for the latter.

D. Single Tank Conveyor Dishwasher: A warewashing machine 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 pre-washing 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 machine 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 warewashing machine that applies potable hot water to the surfaces of wares to achieve sanitization.

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

H. Product Family: Variations of one model offered within a single product line with design differences limited to: finish/color; length of pre-wash section, and orientation (e.g., corner, straight through models). Individual models represented by a product family must have the same rinse water and idle energy consumption.

2) **Scope:**

A. Included Products: Products that meet the definition of a Commercial Dishwasher as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B. The following product types are eligible: undercounter; stationary rack, single tank, door type; single tank conveyor; and multiple tank conveyor. Only those undercounter machines designed for wash cycles of 10 minutes or less are eligible for ENERGY STAR. Pot, pan, and utensil machines may qualify for ENERGY STAR under the stationary rack, single tank, door type requirements.

B. Excluded Products: Flight-type machines are not eligible for ENERGY STAR under this specification. Commercial dishwashers that include an optional manual rinse, after the final sanitizing rinse, are in violation of current NSF Standards and therefore, are not eligible for ENERGY STAR.

3) **Qualification Criteria:**

A. Energy and Water Efficiency Requirements:

**Table 1: ENERGY STAR Requirements for Commercial Dishwashers**

| Machine Type | High Temp Efficiency Requirements | | Low Temp Efficiency Requirements | |
|---|---|---|---|---|
| | **Tank Heater Idle Energy Rate*** | **Water Consumption** | **Tank Heater Idle Energy Rate*** | **Water Consumption** |
| **Under Counter** | ≤ 0.90 kW | ≤ 1.00 gal/rack | ≤ 0.50 kW | ≤ 1.70 gal/rack |
| **Stationary Single Tank Door**** | ≤ 1.0 kW | ≤ 0.950 gal/rack | ≤ 0.60 kW | ≤ 1.18 gal/rack |
| **Single Tank Conveyor** | ≤ 2.0 kW | ≤ 0.700 gal/rack | ≤ 1.6 kW | ≤ 0.790 gal/rack |
| **Multiple Tank Conveyor** | ≤ 2.6 kW | ≤ 0.540 gal/rack | ≤ 2.0 kW | ≤ 0.540 gal/rack |

***** Idle results should represent tank heater idle energy rate measured with **door closed**.
**Includes pot, pan, and utensil machines.

B. High/Low Temperature Machines: Machines designed to be interchangeable in the field from high temp to low temp, and vice versa, shall meet both the high temp and low temp requirements of Table 1 to qualify as ENERGY STAR.

C. Calculations for Determining Gallons per Rack Results: The following calculations shall be used to determine gallons per rack. These calculations are based on gallons per rack conversions provided in the NSF Products and Service Listing for commercial dishwashers at www.nsf.org.

**Conveyor Type**

$$GPR = \frac{GPH \times RL}{CS \times 60}$$

**Door Type**

$$GPR = \frac{GPH \times (WT + RT + DT + LT)}{3600}$$

Load Time= 5 seconds for straight through door-type dishwashers.
Load Time= 7 seconds for corner door-type dishwashers.
Load Time= 30 seconds for front load/unload dishwashers

**Undercounter Type**

$$GPR = \frac{GPH \times (WT + RT + DT + LT)}{3600}$$

Load time= 30 seconds for undercounter dishwashers.

WT= Wash Time in seconds.
RT= Rinse time in seconds.
DT= Dwell time in seconds.
RL= Rack length, use 20x20 in.
LT= Load time.
CS= Maximum conveyor speed in feet per minute
GPH= Water use in gallons per hour.

C. 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 commercial dishwashers, 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** |
| Gallons per Rack (GPR) | NSF/ANSI 3-2007 Standard, *Commercial Warewashing Equipment* |
| Idle Energy Rate – Undercounter and Stationary Rack, Single Tank, Door Type | ASTM Standard F1696, *Standard Test Method for Energy Performance of Single-Rack Hot Water Sanitizing, Door-Type Commercial Dishwashing Machines** |
| Idle Energy Rate – 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 shall be used, for chemical sanitizing machines.

5) **Effective Date:** The ENERGY STAR Commercial Dishwasher Specification shall take effect on **October 11, 2007**. 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.

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 qualification is not automatically granted for the life of a product model.

   A. ASTM Test Standard Review: EPA plans to revisit 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.

   B. Review of Idle Energy Requirements: Within two years of this specification becoming effective, EPA will review idle energy data to determine whether the limits provided in Table 1 provide for sufficient differentiation in the marketplace. If it is determined that revisions are needed, EPA will work closely with industry stakeholders to develop appropriate new levels.