



ENERGY STAR® Program Requirements Product Specification for Commercial Dishwashers

Draft 1 Test Method: Final Rinse Water Consumption

1) OVERVIEW

The following test method shall be used for determining product compliance with the final rinse water consumption requirements (i.e., maximum GPH) in the ENERGY STAR Product Specification for Commercial Dishwashers.

2) APPLICABILITY

This test protocol is applicable for evaluation to the ENERGY STAR Commercial Dishwasher Eligibility Criteria.

3) DEFINITIONS

Unless otherwise specified, all terms used in this document are consistent with the definitions contained in the ENERGY STAR Product Specification for Commercial Dishwashers.

4) TEST INSTRUMENTATION

- A. 0-60 psi (0 kPa – 414 kPa) pressure gauge with an accuracy of +/- 1 psi (+/- 7 kPa)
- B. Scale with an accuracy of +/- 0.01 pounds (+/- 0.005 kg).
- C. Stopwatch with an accuracy of +/- 2%.
- D. Vessel to capture final rinse water; size dependent on tank volume.

5) PREPARATION OF PRODUCT UNDER TEST

Commercial dishwasher shall be installed per manufacturer's installation instructions. Drain connection shall be accessible with sufficient space and allow capture vessel to be positioned beneath.

- A. Fresh Water Final Rinse Stationary Rack Machines: Based on manufacturer instructions, set the rinse flow pressure based on the following:
 - a. For machines marked for final rinse pressure ratings of 20 +/- 5psi (138 +/- 34 kPa), the test shall be run at 20 +/- 1psi (138 +/- 7 kPa)
 - b. For machines marked for final rinse pressure ratings other than 20 +/- psi (138 +/- 34 kPa), and marked pressure range of > 5 psi (34 kPa), the test shall be run with the final rinse pressure set at both the minimum and maximum ratings marked on the unit.
 - c. For machines marked for final rinse pressure ratings other than 20 +/- 5 psi (138 +/- 34 kPa), and marked pressure range of ≤ 5 psi (34 kPa), the test shall be run with the final rinse pressure set at the minimum rating marked on the unit.
- B. Fresh Water Final Rinse Conveyor Machines
 - a. For machines marked for final rinse pressure ratings of 20 +/- 5psi (138 +/- 34 kPa), the test shall

- be run at 20 +/- 1psi (138 +/- 7 kPa)
- b. For machines marked for final rinse pressure ratings other than 20 +/- psi (138 +/- 34 kPa), and marked pressure range of > 5 psi (34 kPa), the test shall be run with the final rinse pressure set at both the minimum and maximum ratings marked on the unit.
 - c. For machines marked for final rinse pressure ratings other than 20 +/- 5 psi (138 +/- 34 kPa), and marked pressure range of \leq 5 psi (34 kPa), the test shall be run with the final rinse pressure set at the minimum rating marked on the unit.
- C. Pumped Final Rinse Stationary Rack Machines (i.e. dump and fill): Machine should be filled to manufacturers recommended level.

6) TEST METHODS

A. Fresh Water Final Rinse Stationary Rack Machines

- a. Weigh the capture vessel.
- b. Operate machine through enough cycles to achieve a steady state, verifying cycle times and water pressure.
- c. Using appropriate sized vessel, catch all water sent to the drain during five complete cycles.
- d. Weigh the water, subtracting the weight of the capture vessel.
- e. Calculate water consumption as follows:
 - i. Gallons per cycle: pounds of water/5 cycles/8.34 pounds per gallon
 - ii. Gallons per hour: gallons per cycle*cycles per hour
 - iii. Gallons per minute: gallons per cycle*rinse cycle duration in minutes

B. Fresh Water Final Rinse Conveyor Machines

- a. Weigh the capture vessel.
- b. Operate machine through enough cycles to achieve a steady state, verifying cycle times and water pressure.
- c. Using appropriate sized vessel, catch all water sent to the drain during one minute of operation.
- d. Weigh the water, subtracting the weight of the capture vessel.
- e. Calculate water consumption as follows:
 - i. Gallons per minute: pounds of water/8.34 pounds per gallon
 - ii. Gallons per hour: gallons per minute*60

C. Pumped Final Rinse Stationary Rack Machines (i.e., dump and fill)

- a. Weigh the capture vessel.

- b. Operate machine through enough cycles to achieve a steady state, verifying cycle times and water levels.
- c. Using appropriate sized vessel, catch all water sent to the drain during five complete cycles.
- d. Weigh the water, subtracting the weight of the capture vessel.
- e. Calculate water consumption as follows:
 - i. Gallons per cycle: pounds of water/5 cycles/8.34 pounds per gallon
 - ii. Gallons per hour: gallons per cycle*cycles per hour
 - iii. Gallons per minute: gallons per cycle*rinse cycle duration in minutes