



# ENERGY STAR® Program Requirements Product Specification for Commercial Dishwashers

## Eligibility Criteria Draft 1 Version 3.0

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7 Following is the **Version 3.0** product specification for ENERGY STAR qualified commercial dishwashers.  
8 A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

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10 **1) Definitions<sup>1</sup>:** Provided below are the definitions of the relevant terms in this document.

- 11  
12 A. Dishwashing Machine: A machine designed to clean and sanitize plates, pots, pans, glasses,  
13 cups, bowls, utensils, and trays by applying sprays of detergent solution (with or without blasting  
14 media granules) and a sanitizing rinse.

### 15 16 **Machine Types**

- 17  
18 B. Stationary Rack Machine: A warewashing machine in which a rack of dishes remains stationary  
19 within the machine while subjected to sequential wash and rinse sprays. This term also applies  
20 to machines in which the rack revolves on an axis during the wash and rinse cycles.

- 21  
22 a) Under Counter: A stationary rack machine with an overall height of 38 inches or less,  
23 designed to be installed under food preparation workspaces. Under counter  
24 dishwashers can be either chemical or hot water sanitizing, with an internal or external  
25 booster heater for the latter.

- 26  
27 i. Glasswashing: A stationary rack, under counter machine specifically designed  
28 to clean and sanitize glasses.

- 29  
30 b) Single Tank, Door Type: A stationary rack machine designed to accept a standard 20  
31 inch x 20 inch dish rack which requires the raising of a door to place the rack into the  
32 wash/rinse chamber. Closing of the door typically initiates the wash cycle.  
33 Subcategories of single tank, stationary door type machines include: single rack;  
34 double rack; pot, pan and utensil washers (PPU); chemical dump and fill type; and,  
35 hooded wash compartment ("hood type"). Single tank, door type models can be either  
36 chemical or hot water sanitizing, with an internal or external booster heater for the  
37 latter.

- 38  
39 i. Pot, Pan, and Utensil (PPU): A stationary rack, door type machine designed to  
40 clean and sanitize pots, pans, and kitchen utensils.

- 41  
42 C. Conveyor Machine: A dishwashing machine that employs a conveyor or similar mechanism to  
43 carry dishes through a series of wash and rinse sprays within the machine.

- 44  
45 a) Single Tank Conveyor: A conveyor machine that includes a tank for wash water  
46 followed by a sanitizing rinse (pumped or fresh water). This type of machine does not  
47 have a pumped rinse tank. This type of machine may include a prewashing section  
48 ahead of the washing section and an auxiliary rinse section, for purposes of reusing  
49 the sanitizing rinse water, between the power rinse and sanitizing rinse sections.  
50 Single tank conveyor dishwashers can be either chemical or hot water sanitizing, with  
51 an internal or external booster heater for the latter.  
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<sup>1</sup> Additional terms found throughout this document, and related to machine components and operation, are defined in NSF 170-2014 *Glossary of Food Equipment Terminology*

53 b) Multiple Tank Conveyor: A conveyor type machine that includes one or more tanks for  
54 wash water and one or more tanks for pumped rinse water, followed by a sanitizing  
55 rinse. This type of machine may include a pre-washing section before the washing  
56 section and an auxiliary rinse section, for purposes of reusing the sanitizing rinse  
57 water, between the power rinse and sanitizing rinse section. Multiple tank conveyor  
58 dishwashers can be either chemical or hot water sanitizing, with an internal or external  
59 booster heater for the latter.  
60

61 c) Flight Type Conveyor: A conveyor machine where the dishes are loaded directly on  
62 the conveyor rather than transported within a rack. This machine is also referred to as  
63 a rackless conveyor.  
64

65 D. Heat Recovery Machine: A sub-type of high temperature, stationary rack or conveyor machine  
66 that includes a heat recovery system for the purpose of heating potable water and may not  
67 require a dedicated ventilation hood.  
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### 69 Sanitation Methods

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71 E. Hot Water Sanitizing (High Temp) Machine: A machine that applies hot water to the surfaces of  
72 dishes to achieve sanitization.  
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74 F. Chemical Sanitizing (Low Temp) Machine: A machine that applies a chemical sanitizing solution  
75 to the surfaces of dishes to achieve sanitization  
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77 G. Chemical Dump and Fill Type Machine: A low temp, stationary rack machine with a pumped  
78 recirculated sanitizing rinse and without a dedicated tank heater.  
79

80 H. Dual Sanitizing Machine: A machine designed to operate as either a high temp or low temp  
81 machine.  
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### 83 Modes and Metrics

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85 I. Wash Mode: For stationary rack machines, the dishwasher is in wash mode when it is actively  
86 running a cycle and is spraying wash water (i.e., water that is neither part of the sanitizing rinse,  
87 post sanitizing rinse, nor the prewashing unit).  
88

89 J. Rinse Mode: For stationary rack machines, the dishwasher is in rinse mode when it is at the end  
90 of the actively running cycle and is spraying hot water or chemical sanitizing rinse water or a post-  
91 sanitizing rinse. If there is a post-sanitizing rinse, it shall be included in rinse mode.  
92

93 K. Dwell Mode: For stationary rack machines, the dishwasher is in dwell mode when it is actively  
94 running a cycle but is not in wash or rinse modes (e.g., the period of time between the wash mode  
95 and the rinse mode).  
96

97 L. Idle Mode: For all dishwasher types, the dishwasher is in idle mode when it is not actively running  
98 but is still powered on and ready to wash dishes at the required temperature.  
99

100 M. Energy Saver Mode: An operational setting that is designed to reduce energy during idle mode  
101 through temporary shut-down of certain machine components (pumps or belt motors) or reduction  
102 of certain temperature set points.  
103

104 N. Idle Energy Rate: The rate of energy consumed by the dishwasher while “holding” or maintaining  
105 wash tank water at the thermostat(s) set point during the time period specified and outside of an  
106 active cycle.  
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108 O. Washing Energy: The rate of energy consumed by the dishwasher while “washing” or “sanitizing”  
109 dish loads, as expressed in kWh/rack.  
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111 P. Water Consumption: Gallons per rack, per square foot, or per hour depending on the machine  
112 type monitored during testing to determine the rate of water usage.

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114 **Qualification Terms**

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

**Note:** For clarification purposes, EPA is proposing a *Heat Recovery Machine* term and definition in Section 1.D. Due to the potential energy savings these types of machines offer through heat recovery technology, the Agency is proposing to further acknowledge these products in the online Product Finder tool.

Considering the introduction of a new certification metric to this specification, EPA is proposing a new term and definition for *Washing Energy* in Section 1.O.

EPA is interested in stakeholder feedback regarding the proposed terms and definitions of *Heat Recovery Machine* and *Washing Energy*. The *Water Consumption* metric is also defined for the first time in this section per the ASTM test methods though it has been a certification requirement since the product specification was initially developed.

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123 **2) Scope:**

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125 A. Included Products: Products that meet the definition of a Commercial Dishwasher as specified  
126 herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section  
127 2.B. The following product types are eligible: under counter; single tank, door type; single tank  
128 conveyor; multiple tank conveyor and high temp flight type conveyor machines. Glasswashing  
129 machines; high temp PPU machines; dual sanitizing and heat recovery machines are also eligible.  
130 Only those under counter machines designed for wash cycles of 10 minutes or less are eligible for  
131 ENERGY STAR. This Version 3.0 specification only covers electric models.

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133 B. Excluded Products: Dishwashers intended for use in residential or laboratory applications are not  
134 eligible for ENERGY STAR under this product specification. Low temp PPU machines and low  
135 temp flight type conveyor machines; steam, gas, and other non-electric models are not eligible for  
136 ENERGY STAR certification under this Version 3.0.

**Note:** There are no ENERGY STAR certified low temperature PPU or flight type machines under the current Version 2.0 and based on market research, there appear to be very few low temperature PPU or flight type dishwashers available in the market. Additionally, no performance data on these types of machines were submitted to EPA during the data assembly period, and as such, EPA is proposing to exclude these product type from the specification.

EPA is interested in stakeholder feedback regarding the removal of low temp PPU and low temp flight type machines from the Version 3.0 scope.

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140 **3) Certification Criteria:**

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142 A. Energy and Water Efficiency Requirements:

Table 1: ENERGY STAR Requirements for Commercial Dishwashers			
Machine Type	Low Temperature Efficiency Requirements		
	Idle Energy Rate*	Washing Energy	Water Consumption**
Under Counter	≤ 0.25 kW	≤ 0.15 kWh/rack	≤ 0.80 GPR

<b>Stationary Single Tank Door</b>	≤ 0.30 kW	≤ 0.15 kWh/rack	≤ 1.08 GPR
<b>Single Tank Conveyor</b>	≤ 0.85 kW	≤ 0.16 kWh/rack	≤ 0.60 GPR
<b>Multiple Tank Conveyor</b>	≤ 1.00 kW	≤ 0.22 kWh/rack	≤ 0.45 GPR

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<b>Table 2: ENERGY STAR Requirements for Commercial Dishwashers</b>			
<b>Machine Type</b>	<b>High Temperature Efficiency Requirements</b>		
	<b>Idle Energy Rate*</b>	<b>Washing Energy</b>	<b>Water Consumption**</b>
<b>Under Counter</b>	≤ 0.30 kW	≤ 0.35 kWh/rack	≤ 0.70 GPR
<b>Stationary Single Tank Door</b>	≤ 0.55 kW	≤ 0.35 kWh/rack	≤ 0.75 GPR
<b>Pot, Pan, and Utensil (PPU)</b>	≤ 0.90 kW	≤ 0.80 kWh/rack	≤ 0.35 GPSF
<b>Single Tank Conveyor</b>	≤ 1.20 kW	≤ 0.34 kWh/rack	≤ 0.60 GPR
<b>Multiple Tank Conveyor</b>	≤ 1.85 kW	≤ 0.35 kWh/rack	≤ 0.50 GPR
<b>Single Tank Flight Type</b>	kW ≤ 0.10x + 3.50	Reported	GPH ≤ 2.975x + 55.00
<b>Multiple Tank Flight Type</b>	kW ≤ 0.10x + 3.50	Reported	GPH ≤ 4.96x + 17.00

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\*Idle results should be measured with the **door closed** and represent the total idle energy consumed by the machine including all tank heater(s) and controls. Booster heater (internal or external) energy consumption should not be part of this measurement unless it cannot be separately monitored per ASTM F1696-18 and ASTM F1920-15 Sections 10.8 and 10.9, respectively. \*\* GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH = gallons per hour; x = maximum conveyor speed (feet/min as verified through NSF 3 certification) x conveyor belt width (feet).

- A. The total washing energy shall include internal or external booster heater energy in addition to the tank, heat, motor, control, and any additional auxiliary energy, expressed in kWh/rack.

**Note:** EPA's main drivers for amending this specification's minimum performance levels include: 1) estimated ENERGY STAR market share of approximately 67% in 2017, and 2) availability of a new test method that defines the new washing energy metric and revises the idle energy and water consumption metrics.

In 2017, EPA distributed a data assembly form in an effort to encourage submission of data from commercial dishwasher stakeholders for machines tested to ASTM F1696-15 (18) and ASTM F1920-15. Manufacturers responded to this seven-month effort to assemble relevant data and provided a basis for calculating the new washing energy requirements for product subtypes. EPA has proposed wash energy levels for Version 3.0 based on the provided data. EPA encourages manufacturers who are able to provide additional data immediately following this Draft 1 to do so to allow further review of the wash energy limits.

*Performance Limits*

EPA constructed a joint dataset from stakeholder-submitted data, and the existing ENERGY STAR Version 2.0 Qualified Products List (QPL), including data from over 15 dishwasher manufacturers. Since many products exist in both datasets, duplicate products were identified and removed, with ASTM test data given priority, when available. EPA assembled substantial data on idle energy rate and water consumption performance from the QPL. However, minimal data was available for the washing energy performance. Upon evaluation of the data,

**Note cont.**

EPA believes the levels for idle energy rate, washing energy, and water consumption in Tables 1 and 2, above, collectively recognize leadership products within each category and reflect a conservative approach that accounts for uncertainty in wash energy. Addressing wash energy is new to ENERGY STAR and this Version 3.0 specification provides an opportunity to improve the efficiency of wash energy and build a more robust dataset of certified products.

A common theme in commercial dishwasher data is to have multiple similar configurations of a single product. This was addressed by assigning all product groups within a single manufacturer which shared the same idle energy rate, washing energy, and water consumption values a weight of  $1/N$ , where  $N$  is the number of identical products with configuration differences. Weighting was used for visual representations of data but not in the final calculations. High temperature and low temperature configurations of a product were treated as different products, and high and low temperature requirements were constructed in separate analyses.

Limits were initially calculated for each requirement (idle, wash, water consumption) based on the top 25% of products in each category. Following this, all limits were applied to products in each category, and adjusted as appropriate to ensure the pass rates were identifying top performing products using representative model data. The results of this exercise allowed EPA to identify the most appropriate levels for each metric under each respective type of dishwasher. The Agency then confirmed the percentage of models that meet the proposed ENERGY STAR Draft 1 levels for all three metrics (idle, wash, water consumption) to determine the pass rates of each sub-category. The EPA dataset includes 308 models from 15 manufacturers. While EPA has substantial data for idle energy and water consumption, the Agency has a select set of wash energy data points. As such, EPA has taken a conservative approach when setting wash energy levels.

EPA understands there are dishwashers that come equipped with internal booster heaters and others that operate with external booster heaters. Regardless if the booster heater is internal or external, in order to effectively capture total washing energy, EPA is proposing that for ENERGY STAR certification, the booster heater energy shall be included in the washing energy calculation expressed in kWh/rack. For clarification purposes, EPA includes this additional guidance in Section 1.O., above. EPA encourages stakeholders to comment on the approach the Agency has proposed in this specification as it pertains to accurately capturing total washing energy.

*Water Consumption*

EPA was asked if the water consumption requirement would be eliminated due to the introduction of the washing energy metric. The Agency considered the benefits that the water consumption metric offers end-users and as such is proposing to uphold the water consumption requirement in addition to the new washing energy requirement. Water efficiency remains a major consideration, especially in areas throughout the country that are faced with limited water resources. Furthermore, based on the data used in the energy and water performance analysis conducted in support of this Draft 1 specification, the Agency sees opportunities for additional water savings in commercial dishwashers. EPA is proposing amended water consumption limits in Tables 1 and 2, above.

*Dump and Fill Machines*

One stakeholder indicated to EPA that there is currently no distinction between dump and fill type dishwashers and other stationary, tank-type models. This is because there is no distinction within the ENERGY STAR dataset. Considering tank heaters are absent in dump and fill machines, those types of products use considerably less energy. Upon review of the data set, it appears clear that the models with a very minimal idle rate are representative of models without tank heaters; however, insufficient data prohibits cleanly breaking out the dump and fill types of products from the other stationary, tank-type products. As a result, EPA acknowledges the difference in idle energy performance between the dump and fill models compared to other stationary models with tank heaters regarding the potential impact on the dataset. Therefore, EPA adjusted initially calculated idle energy and water consumption levels to ensure this washing technology was not excluded by proposed water consumption requirements, and to ensure that the significantly low idle energy typical of this technology was not factored into low temperature idle requirements for products that do not have this configuration. This adjustment only impacts stationary door requirements and does not impact undercounter requirements.

**Note cont.**

EPA encourages stakeholders to provide feedback on the proposed levels for categories that include dump and fill machines.

*Heat Recovery Machines*

EPA received a request to separate the heat recovery dishwashers from conventional products without heat recovery technology. While the Agency recognizes the benefits of the implementation of heat recovery solutions and encourages that approach, EPA received minimal washing energy performance data supporting separate washing energy levels for models with integrated heat recovery technology. Furthermore, based on available idle and water consumption data on the ENERGY STAR Product Finder, heat recovery dishwashers perform as well or in some cases better than many other conventional, non-heat recovery certified models. Additionally, though the data for washing energy is limited, as previously stated, there are some heat recovery models that meet all three proposed levels.

EPA understands that as per the ASTM test methods, there is a considerable temperature difference in incoming potable water for heat recovery units compared to conventional, non-condensing models, but additional washing energy data is needed for the Agency to understand the actual energy impact across these models. As such, the Agency is not proposing separate levels for heat recovery dishwashers in this Version 3.0 specification until further data suggests otherwise. Recognizing the potential benefits of heat recovery dishwashers, EPA proposes additional recognition on Product Finder for certified heat recovery models.

The Agency encourages stakeholders to submit additional washing energy performance data for further consideration in the development of separate levels for heat recovery dishwashers and a potential adder for heat recovery. EPA is also seeking feedback regarding highlighting heat recovery capability on the ENERGY STAR Product Finder for these types of models.

*Low Temperature Dishwashers*

Low temperature dishwasher idle performance was noted to be significantly better than Version 2.0 requirements, often allowing a significant reduction of the ENERGY STAR requirements. Stationary door-type products had a large improvement in water use per rack. As a result, EPA has proposed limit reductions for low temperature idle and water consumption levels in Table 1.

*High Temperature Dishwashers*

As with low temperature dishwasher idle performance, EPA noticed improvement with high temperature dishwasher idle performance over Version 2.0, but to a lesser extent than in low temperature models. All high temperature categories experienced a significant improvement in water use compared to Version 2.0 requirements. As such, EPA proposes more stringent levels for high temperature idle and water consumption levels in Table 2.

*Flight Type Machines*

Flight type dishwashers were analyzed in a separate analysis, due to the complexity of the product category. EPA notes that an idle limit, as a function of conveyor speed in square feet per minute (sfpm) appears to be supported by the distribution of the data. The limited number of single tank machines resulted in the setting one idle limit for both single tank and multiple tank flight type machines.

EPA received sufficient data to develop an idle consumption level as a function of conveyor speed – as was the case for water consumption; however, no adjustments were made to water consumption due to concerns about potentially excluding dual rinse machines which have a relatively higher water consumption level. Insufficient washing energy data precludes proposing a washing energy limit for flight type products at this time; however, EPA proposes washing energy as a reporting requirement to continue certifying flight type machines while collecting washing energy performance data.

EPA requests stakeholder feedback on the overall methodology in the development of the proposed Version 3.0 Draft 1 levels.

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- B. User-Adjustable Conveyor Machines: Conveyor machines that offer multiple speeds adjustable by the end user must meet the ENERGY STAR requirements using the maximum conveyor speed setting tested to and certified to NSF/ANSI Standard 3. Water consumption values using the

- 160 maximum conveyor speed setting shall be used for certification purposes. Water consumption  
 161 using the slowest conveyor speed shall also be reported to EPA.  
 162  
 163 C. Dual Sanitizing Machines: As defined in Section 1, these machines shall meet both the high temp  
 164 and low temp requirements presented in Tables 1 and 2, above, to earn ENERGY STAR  
 165 certification.  
 166  
 167 D. Dual Purpose Door Type Machines: Machines designed to be used either as a standard door type  
 168 machine or a PPU machine shall meet the performance requirements for both of those  
 169 subcategories.  
 170  
 171 E. Post Sanitizing Machines: Machines offering a post sanitizing rinse will be evaluated for ENERGY  
 172 STAR qualification with the post sanitizing rinse turned on during testing. The final rinse water  
 173 consumption will include both sanitizing and post sanitizing rinses.  
 174  
 175 F. Industry Standard Certifications: All machines shall be certified to the NSF/ANSI 3-2017 Standard,  
 176 *Commercial Warewashing Equipment*.  
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**Note:** EPA updated the industry standard certification requirement in Section 3.F to reflect the current NSF/ANSI 3-2017 standard.

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 180 **4) Test Requirements:**  
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- 182 A. Representative Models shall be selected for testing per the following requirements:  
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 184 a. For certification of an individual product model, the representative model shall be  
 185 equivalent to that which is intended to be marketed and labeled as ENERGY STAR.  
 186  
 187 b. For certification of a product family, any model within that product family can be tested  
 188 and serve as the representative model.  
 189  
 190 B. When testing commercial dishwashers, the following test methods shall be used to determine  
 191 ENERGY STAR certification:  
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Table 3: Test Methods for ENERGY STAR Certification	
Dishwasher Category	Test Method Reference
Under-counter; stationary single tank door; pot-pan-utensil	ASTM F1696-18, <i>Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines</i>
Single tank conveyor; multiple tank conveyor; single tank flight; multiple tank flight	ASTM F1920-15, <i>Standard Test Method for Energy Performance of Rack Conveyor Commercial Dishwashing Machines</i>

- 193  
 194 C. For dishwashers with multiple voltage-versatility and those that are available in different voltage  
 195 configurations, the representative model shall be tested at the most energy consumptive (worst case  
 196 scenario) rating, according to the manufacturer.  
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**Note:** During the release of the Version 2.0 specification, EPA noted that the Agency would revisit the specification following revisions to the ASTM F1696 and F1920 standard test methods to evaluate new performance requirements that captures total machine energy performance. The current Version 2.0 specification references the *ENERGY STAR Test Method for Commercial Dishwashers (Rev. May-2012)*, which is used to measure idle energy rates for each type of eligible product. The Version 2.0 eligibility criteria include maximum idle energy rates and water consumption rates. In order to effectively characterize the total energy profile of dishwashers and the potential for water and energy savings, it is necessary to assess water consumption as well as idle and wash energy performances.

**Note cont.**

The ASTM F1920 and F1696 and standards were finalized in 2015 and 2018, respectively, to align the idle test with the *ENERGY STAR Test Method for Commercial Dishwashers (Rev. May-2012)*, and to include the wash energy performance tests. Since the changes to the ASTM standards reflect those outlined in the ENERGY STAR test method, EPA has removed the ENERGY STAR test method from this specification. EPA updated the test methods referenced in Table 3, above, to reflect the most current test methods for determining energy consumption and potable water usage. However, during the Version 3.0 launch webinar, hosted on August 16, 2017, stakeholders identified potential opportunities for test method clarification. The following addresses concerns that were expressed regarding the test methods and areas where additional guidance could be provided in this specification.

*Voltage*

Commercial dishwashers are available in various voltage ratings in the U.S., most commonly: 120V, 208V, 230V, 240V, 480V, and occasionally 600V. The majority of machines sold in the U.S. require a minimum of 208V, which may be the most common commercial dishwasher rating in the U.S., according to various stakeholders. Upon review of the certified models listed on ENERGY STAR's Product Finder, the Agency found that an overwhelming number of certified products are available in more than one voltage, whether it's adjustable upon installation or factory set. Dishwashers with multiple voltage-versatility (i.e., 208-240V) may have different energy performance results based on the rating at which the machine is tested. EPA understands the cost and time burden of testing products in multiple ratings and has explored potential solutions to reduce the testing burden as it relates to voltage-versatility. One suggestion is to allow certification testing completed at the most common rating for that machine and add a caveat in the Product Finder notifying customers that energy performance may vary at different electrical ratings and encourage the customer to reach out to the manufacturer of that model for additional information. However, the Agency is concerned this might mislead customers into purchasing equipment at a different electrical rating that uses more energy, depriving them of the expected energy savings. Therefore, EPA proposes that for dishwashers with multiple voltage-versatility be tested and certified at the most energy consumptive rating, according to the manufacturer. This approach would minimize the test burden on manufacturers as the certification would extend to all other voltage configurations of that model.

*Idle Mode Required Temperature*

One stakeholder asked if the idle mode "required temperature" referred to the NSF temperature or the manufacturers' idle mode temperature. In Section 3.1.19 of ASTM F1696-18 *Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines*, idle mode is defined for all dishwasher types. The dishwasher is in the idle mode when it is not actively running but is still powered on and ready to perform wash cycles while maintaining the tank or tanks at the required minimum temperature. In Section 10.8.1.5, the test method further clarifies that the minimum tank temperature shall not drop below the data plate listed minimum temperature. If the temperature does drop below the minimum data plate listed temperature, the test is terminated and further guidance is provided in the test method.

EPA encourages stakeholders to submit comments in response to the referenced ASTM test methods and the voltage testing guidance.

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G. 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.
- c. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the second decimal place.

**Note:** EPA moved the Significant Digits and Rounding section from section 3 to section 4 for this specification.

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211 5) **Effective Date:** The ENERGY STAR Commercial Dishwasher Specification shall take effect on **TBD**.  
212 To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect  
213 on the model's date of manufacture. The date of manufacture is specific to each unit and is the date  
214 on which a unit is considered to be completely assembled.  
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**Note:** The EPA anticipates this specification development process will be completed in Q3 2019 with the effective date following 9 months after.

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218 6) **Future Specification Revisions:** EPA reserves the right to change the specification should  
219 technological and/or market changes affect its usefulness to consumers, industry, or the environment.  
220 In keeping with current policy, revisions to the specification are arrived at through industry  
221 discussions. In the event of a specification revision, please note that the ENERGY STAR certification  
222 is not automatically granted for the life of a product model.