

Overtime rates (outside the employee's normal tour of duty)	Premium rate user fee Beginning Oct. 1, 2003
Per hour	\$100.00
Per quarter hour	25.00
Premium hourly rate for Sundays:	
Per hour	112.00
Per quarter hour	28.00

* * * * *

■ 16. In § 130.50, paragraph (b)(3)(i), the table is revised to read as follows:

§ 130.50 Payment of user fees.

(b) * * *

(3) * * *

(i) * * *

OVERTIME FOR FLAT RATE USER FEES^{1, 2}

	Outside of the employee's normal tour of duty	Overtime rates (per hour)		
		Oct. 1, 2003– Sept. 30, 2004	Oct. 1, 2004– Sept. 30, 2005	Beginning Oct. 1, 2005
Rate for inspection, testing, certification or quarantine of animals, animal products or other commodities. ³	Monday-Saturday and holidays	\$48.00	\$49.00	\$51.00
Rate for commercial airline inspection services. ⁴	Sundays	63.00	65.00	67.00
	Monday-Saturday and holidays	39.00	40.00	41.00
	Sundays	51.00	53.00	55.00

¹ Minimum charge of 2 hours, unless performed on the employee's regular workday and performed in direct continuation of the regular workday or begun within an hour of the regular workday.

² When the 2-hour minimum applies, you may need to pay commuted travel time. (See § 97.1(b) of this chapter for specific information about commuted travel time.)

³ See § 97.1(a) of this chapter or 7 CFR 354.3 for details.

⁴ See § 97.1(a)(3) of this chapter for details.

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Done in Washington, DC, this 26th day of August 2003.

Kevin Shea,

Acting Administrator, Animal and Plant Health Inspection Service.

[FR Doc. 03-22141 Filed 8-28-03; 8:45 am]

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DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 430

[Docket No. EE-RM/TP-99-500]

RIN 1904-AB10

Energy Conservation Program for Consumer Products: Test Procedure for Dishwashers

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: Under Part B of title III of the Energy Policy and Conservation Act (EPCA or the Act), the Department of Energy (DOE or the Department) promulgates a rule amending its test procedure to determine the energy

efficiency of residential dishwashers. This amendment provides a new test procedure for testing the energy consumption of soil-sensing models, requires that manufacturers or private labelers include the measurement of standby power consumption in the estimated annual operating cost and estimated annual energy use calculations for all dishwasher models, and adds new specifications for instrumentation requirements. It also revises the number of cycles per year used for calculating the estimated annual operating cost, based on new survey data concerning consumer practices.

EFFECTIVE DATES: This rule is effective September 29, 2003. The incorporation by reference of certain publications listed in this rule is approved by the Director of the Federal Register as of September 29, 2003.

ADDRESSES: You can read copies of all materials related to this rulemaking in the Freedom of Information Reading Room (Room 1E-190) at the U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

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SUPPLEMENTARY INFORMATION: You may obtain copies of the standard referenced in this final rule and referred to as ANSI/AHAM DW-1 (American National Standard, Household Electric Dishwashers, ANSI/AHAM DW-1-1992) from the Association of Home Appliance Manufacturers (AHAM), 1111 19th Street, NW., Suite 402, Washington, DC 20036, (202) 872-5955. Information regarding this rulemaking is also available on the Buildings Program Web site at the following address: http://www.eere.energy.gov/buildings/appliance_standards/.

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I. Introduction

A. Authority

Title III of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles (Program). The products currently subject to this Program ("covered products") include residential dishwashers, the subject of today's final rule. (42 U.S.C. 6291 *et seq.*)

Under the Act, the Program consists of three parts: Testing, labeling, and the Federal energy conservation standards. The Department, in consultation with the National Institute of Standards and Technology (NIST), may amend or establish test procedures as appropriate for each of the covered products. (42 U.S.C. 6293) The purpose of the test procedures is to measure energy efficiency, energy use, or estimated

annual operating cost of a covered product during a representative average use cycle or period of use. The test procedures must not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

If DOE amends a test procedure, EPCA requires DOE to determine whether the new test procedure would change the measured energy efficiency or measured energy use of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1)) If DOE determines that a change would result, DOE must amend the applicable energy conservation standard during the rulemaking that establishes the new test procedure. (42 U.S.C. 6293(e)(2)) In setting any new energy conservation standard, DOE is required to measure, with the new test procedure, the energy efficiency or energy use of a representative sample of covered products that minimally comply with the existing standard. The average energy efficiency or energy use of these representative samples under the new test procedure shall constitute the amended energy conservation standard for the applicable covered products. (42 U.S.C. 6293(e)(2))

Effective 180 days after DOE prescribes or establishes an amended or new test procedure for a covered product, no manufacturer, distributor, retailer, or private labeler may make any representation with respect to the energy use, efficiency, or cost of energy consumed by the product, unless the product has been tested in accordance with such amended or new DOE test procedure and the representation fairly discloses the results of that testing. (42 U.S.C. 6293(c)(2)) This restriction on representations will take effect 180 days after the date this final rule is "prescribed" (*i.e.*, the date this rule is published in the **Federal Register**). Because this final rule itself will become effective 30 days after its publication in the **Federal Register**, a manufacturer, distributor, retailer, or private labeler may begin using the new test procedure to make representations with respect to the energy use, efficiency, or cost of energy consumed by the product beginning with the effective date of this rule.

B. Background

On December 18, 2001, the Department published a final rule amending the dishwasher test procedure that had been in effect since 1987 (hereafter referred to as the "2001 final rule"). 66 FR 65091. That rulemaking tightened some testing specifications, changed the definitions of compact and standard models, and reduced the

average number of use cycles per year from 322 to 264. It did not, however, finalize the revised test procedure that the Department had proposed to measure the energy consumption of the newer soil-sensing models. Manufacturers were unable to adequately test these models with the existing test load of clean dishes. In the 2001 final rule, the Department concluded that it needed to conduct additional research regarding how to test accurately the variety of soil-sensing technologies used, and to collect more data regarding consumer dishwasher behavior. In the following year, the Department worked with industry and other stakeholders to explore possible approaches and to collect additional data to support the development of a new test method. In addition, the Department hired an independent research organization, Arthur D. Little, Inc. (ADL), whose technology and innovation business has become known as TIAX LLC, to collect and evaluate all available surveys and studies regarding consumer dishwasher use. The ADL research addressed both frequency of use and frequency of pre-rinsing the dish load. DOE placed the December 18, 2001, ADL report and the March 5, 2002, ADL research addendum on its Building Research and Standards website for stakeholder review and comment.

The Department published a Notice of Proposed Rulemaking (NOPR) on September 3, 2002 (hereafter referred to as the September 2002 NOPR or NOPR), defining two types of dishwashers, soil-sensing and non-soil-sensing, according to whether a dishwasher could automatically adjust its wash cycle in response to the amount of food left on the dish load. 67 FR 56232. The Department did not propose any changes to the existing test procedure for non-soil-sensing dishwashers, which still would use clean dishes, tested during the normal cycle. However, using the recommendations from the ADL research, the Department proposed for soil-sensing dishwashers a new test procedure using soiled dishes instead of clean ones. The procedure required that manufacturers or private labelers run a series of three tests using heavy, medium, and light soil loads in order to test a dishwasher's soil-sensing mechanism at different soil levels. This procedure allowed the energy factor for a soil-sensing dishwasher to become an aggregated number, the average of the energy consumption figures from the three soiled test loads, weighted according to user frequency. For soiling the dishes, the test procedure required

the same food soils used in the ANSI/AHAM DW-1 performance test, but with fewer soiled place-settings for each of the three test levels. 67 FR 56243.

In the September 2002 NOPR, DOE also proposed adding a method for calculating the standby power consumption for all dishwashers, both soil-sensing and non-soil-sensing, and including that energy in the estimated annual operating cost and estimated annual energy use calculations, but not in the energy factor. 67 FR 56242, 56244. The NOPR provided instrumentation requirements for measuring standby power and proposed changing the electrical energy supply requirements to 120 volts ± 2 percent, instead of 115 volts. The NOPR also proposed a further reduction in the average number of use cycles from 264 to 215 per year based on new consumer use data.

This final rule adopts most of the test procedure provisions proposed in the September 2002 NOPR, and also incorporates certain changes that were presented and discussed at the October 22, 2002, public hearing with some modifications as discussed below. A few additional changes in test specifications resulted from information learned when NIST began testing two soil-sensing dishwashers using the proposed test procedure. The Department used NIST testing to verify that the test procedure language was clear and that the test was able to capture the machine's energy performance.

C. Summary of the Test Procedure Revisions

The following are the major revisions to the dishwasher test procedure included in this final rule:

1. Updated representative average dishwasher use
2. New three-level test procedure for soil-sensing dishwashers:
 - Detergent and rinse agent
 - Specifications for dish load
3. New test procedure to measure standby power consumption:
 - "Standby mode" definition
 - New measurement procedures
 - New instrumentation requirements
 - Corrected calculation procedure for the estimated annual energy use
4. New definitions:
 - Non-soil-sensing dishwashers
 - Soil-sensing dishwashers
 - Sensor heavy response
 - Sensor light response
 - Sensor medium response
 - Truncated sensor heavy response
 - Truncated sensor light response
 - Truncated sensor medium response
5. Modifications to improve the clarity and repeatability of the test procedure:

- Clarify the definition of water-heating dishwasher
- Retain testing voltage of 115 Volts
- Reword definition of dryer energy, E_D
- Reword calculation of the number of standby hours per year, H_s , and duration of wash cycle, L
 - Correct typographical error in equation for Energy Factor (EF)
 - Reword flow rate tolerance
 - Reduce 140 °F tolerance from ± 5 °F to ± 2 °F
 - Revise format of measurement descriptions of machine electrical energy consumption and water consumption

II. Discussion

A. General Discussion

This final rule defines two types of dishwashers, soil-sensing and non-soil-sensing models, provides a new test procedure for soil-sensing dishwashers, and makes some modifications applicable to both soil-sensing and non-soil sensing test procedures. Manufacturers or private labelers must calculate the energy factor for soil-sensing models using a weighted average of the results from three tests with three different soiled loads of dishes: Heavy, medium, and light. The test procedure for non-soil-sensing models requires only one test using a load of clean dishes. In addition, manufacturers or private labelers must use a new test method to calculate the standby power consumption of any dishwasher that uses standby power technology (including both soil-sensing and non-soil-sensing dishwashers) and must add that value to the Estimated Annual Operating Cost (EAO) and Estimated Annual Energy Use (EAEU) figures. At this time, however, the energy factor for dishwashers will not include the standby power consumption amounts. This final rule also reduces the representative average number of use cycles per year in the calculations for the EAO to 215, down from 264 cycles per year.

The new test procedure for soil-sensing dishwashers reflects the combined efforts of many stakeholders who have worked with the Department to find a more accurate way of testing dishwasher models which use smart technology to sense and adjust the length of the wash cycle according to the soil level of the dish load. A series of meetings and discussions and the sharing of DOE draft proposals for comment on the web revealed a coincidence of views on the major features of the test procedure among stakeholders at the October 22, 2002,

public hearing on the NOPR. The Association of Home Appliance Manufacturers (AHAM) commented that it was in general agreement with the NOPR. (Public Hearing Tr. p. 39)¹ The Consortium for Energy Efficiency (CEE) also stated that it was very supportive of the proposed test for soil-sensing dishwashers. (Public Hearing Tr. p. 89)

Although AHAM and CEE would like to see standby power energy consumption included in the energy factor at some point in the future, these stakeholders agreed that the more important goal at this time was the completion of a test procedure for soil-sensing models as quickly as possible. (AHAM No. 33 at 4; CEE No. 35 at 1)² The following sections discuss specific components of the new test procedure and changes that the Department made to the NOPR as a result of stakeholder comments.

B. Updated Representative Average Dishwasher Use

One figure needed for computing the EAO is a number the Department selects to represent the average number of times consumers run their dishwashers in the course of one year. In 1983, DOE amended the dishwasher test procedure to reduce the representative average use from 416 cycles per year to 322 cycles per year based on surveys of consumer use conducted prior to 1982. In 2001, DOE further reduced the representative average use from 322 cycles per year to 264 cycles per year based on the Soap and Detergent Association's data for available years between 1985 and 1995. (66 FR 65092, December 18, 2001) For this rulemaking, DOE commissioned a study by ADL to identify new consumer use data that could be used to evaluate the 264 cycle requirement and update it if appropriate. The findings of this study established that consumer use ranged from 200 to 233 cycles per year. (ADL No. 25 at 20) Therefore, in the September 2002 NOPR, DOE proposed 215 as the average number of dishwasher use cycles per year, selecting the approximate midpoint of the 200–233 cycle range.

At the October 22, 2002, public hearing, the Oregon Office of Energy (OOE) stated that the American Water Works Association (AWWA) had data

¹ "Public Hearing Tr. p. 39" refers to the page number of the transcript of the "Dishwasher Test Procedure Proposed Rule Public Hearing" held in Washington, DC on October 22, 2002.

² No. 33 and No. 35 refer to the numbers of the written comments and supporting documents included in the docket for this rulemaking (Docket Number EE-RM/TP-99-500). Numbers 4 and 1 refer to the cited page numbers in those written comments.

obtained by sub-metering consumers that could establish the number of dishwasher cycles per year more accurately than surveys. (OOE, Public Hearing Tr. p. 124) Following the public hearing, DOE obtained the AWWA data and found: (1) That water use specific to dishwashers was not listed separately from other appliances and (2) that the study was not nationally representative. Later, in a written comment, OOE stated that further research into the data from AWWA on dishwasher cycles per year determined that the dishwasher data was combined with, and inseparable from, household lavatory and kitchen sink water use. As a result, OOE concluded "that the data and analysis presented by ADL at the October 22nd public hearing probably represents the best basis for establishing today's annual dishwasher use, in cycles per year." (OOE No. 36 at 2) As a result of DOE's own analysis and OOE's comment, the Department has decided not to use the AWWA data in this rulemaking.

AHAM commented that DOE should consider selecting 208 cycles per year, a value that exactly represents using a dishwasher four times per week (4 cycles per week \times 52 weeks = 208 cycles per year). It stated that since that number is reasonably close to DOE's proposal of 215, and still within the range of 200 to 233 supported by ADL research, the selection of 208 cycles per year would aid the consumer in understanding the content of the Federal Trade Commission's (FTC) EnergyGuide label. (AHAM No. 33 at 3) The OOE, however, stated that it concurred with the Department's proposed cycles-per-year estimate of 215, and found no issue in not using four cycles per week on EnergyGuide labels, in spite of the resulting mathematical difference between 208 and 215. It believed that the annual dollar cost difference of slightly more than a dollar, if consumers noticed it at all, would be a negligible difference. (OOE No. 36 at 2)

While the Department recognizes that the FTC generally rounds average use to an integer value and the number 208 would represent a perfect four wash cycles per week, the Department does not believe that the number of cycles per year should be selected on the basis of numerical alignment.

The best data available to DOE establishes a consumer use range from 200 to 233 cycles per year, and DOE proposed a midpoint in this range because "this range is appropriate but no definitive number within that range appears to be better than any other." 67 FR 56235. Comment was divided on the

best number to use in this range, but none of the comments offered any persuasive argument or analysis for adopting a number different from the one DOE had proposed. Therefore, DOE is retaining 215 cycles per year as the representative average number of use cycles per year. This number represents a significant drop from the current value of 264 cycles per year and is appropriate because it is based on an analysis of the best available data. Section 430.23(c) of subpart B of the test procedure now includes 215 as the value of "N", the representative average number of dishwasher cycles per year used in the formula for calculating the EAOC.

C. New Three-Level Test Procedure for Soil-Sensing Dishwashers

At the October 22nd public hearing and in the written comments DOE received, there was general agreement regarding the major components of the proposed procedure for testing soil-sensing dishwashers. The new test procedure adopts a three-level soil test based on the soils used in ANSI/AHAM DW-1. The energy factor for a soil-sensing dishwasher will be computed using a weighted average of the normal wash responses from testing the dishwasher three separate times with three soil levels: heavy, medium, and light. Those conducting the tests will measure and calculate the energy consumption responses for each of the three cycles (*i.e.*, sensor heavy, sensor medium, and sensor light for soil-sensing dishwashers) in the same way as the test procedure for non-soil-sensing dishwashers which uses clean dishes in the normal cycle. However, DOE will base the machine energy and water energy components for a soil-sensing dishwasher on a weighted average of the three energy consumption tests, according to the frequency with which consumers wash light, medium, and heavy loads. Thus, under sections 5.1.2, 5.2.2, and 5.3.2 of the test procedure, the energy factor will be a number computed from the three test cycles to represent the normal energy efficiency of the soil-sensing machine.

From available survey data, ADL determined the following distributions of typical soil levels for U.S. households using dishwashers: 5 percent heavy level of soil, 33 percent medium level of soil, and 62 percent light level of soil. (Review of Survey Data to Support Revisions to DOE's Dishwasher Test Procedure, December 18, 2001; ADL No. 25 at 8) The Department is using the distribution of these three soil level categories to establish the weighting factors, F , as follows: for the heavy response, $F_{hr} = 0.05$; for the medium

response, $F_{mr} = 0.33$; and for the light response, $F_{lr} = 0.62$. The resulting equation for the machine energy, M , for soil-sensing dishwashers is:

$$M = (M_{hr} \times F_{hr}) + (M_{mr} \times F_{mr}) + (M_{lr} \times F_{lr}).$$

The resulting equation for the amount of water used, V , for soil-sensing dishwashers is:

$$V = (V_{hr} \times F_{hr}) + (V_{mr} \times F_{mr}) + (V_{lr} \times F_{lr}).$$

AHAM submitted a written comment supporting the weighting factors for the three soil levels, stating that "the proposed test procedure aligns well with actual consumer practices." (AHAM No. 33 at 2) Along with supporting the soil weighting factors, the OOE also agreed with the Department's selection of the soils and soiling method specified for industry use in the ANSI/AHAM DW-1 standard, commenting that it is confident that AHAM's DW-1 test method is the best basis for a methodology that can deliver repeatable results for these models. (OOE No. 36 at 2)

Detergent and Rinse Agent

In addition to supporting the overall test methodology, commenters recommended two changes regarding the amount of detergent and rinse agent (also referred to as rinse additive or rinse aid) used in the proposed test. In its comment, Maytag Corporation suggested the Department reduce by at least half the amount of detergent which DOE specified in the September 2002 NOPR because of the smaller size of the test loads. The firm commented that the ANSI/AHAM DW-1 soiled dish load which industry uses as a performance test "is 10-12 place settings and the 0.5 percent detergent concentration that is stated in the ANSI/AHAM DW-1 test protocol is based on that amount of soil level. The detergent amount is to improve cleanability not to impact energy consumption." (Maytag No. 32 at 1) AHAM also indicated that, because the soil levels in the DOE test procedure are so much smaller than the soil level in the original ANSI/AHAM DW-1 procedure, the amount of detergent stated in the September 2002 NOPR should be reduced accordingly: to one-half the amount of detergent used in the AHAM performance test. (AHAM No. 33 at 6) Maytag also stated, "Rinse additive should not be used in the test for the following reason. Rinse additive is usually released into the dishwasher in the last rinse before the heated dry [cycle] and is used to help improve drying and reduce spotting. It does not impact energy consumption of the dishwasher." (Maytag No. 32 at 1) The OOE commented that since the use of

rinse aid has no demonstrated impact on energy or water use, to require it for energy use testing would amount to a senseless waste of money and chemicals. (OOE No. 36 at 4) The Department agrees with these comments regarding the reduction of unnecessary chemical use and is therefore reducing the amount of detergent by half in section 2.8 of the test procedure and omitting the instruction to use rinse agent that DOE had proposed in section 2.7 of the NOPR.

This final rule reflects the consensus on the appropriateness of the current soil loads and weighting factors of the new test procedure as proposed, and incorporates the above changes regarding detergent and rinse agent.

Specifications for Dish Load

In the September 2002 NOPR, DOE proposed incorporating the August 20, 1999, "Addendum to Appendix A of AHAM DW-1-1992" by reference into the final rule to specify the type of dishes to be used in the test procedure. At the October 22 public hearing, however, AHAM stated that because some dishes in the ANSI/AHAM DW-1 Addendum are no longer available, DOE should use a new reference list which will be included in the ANSI/AHAM DW-1 revision currently under consideration. (Public Hearing Tr. p. 54) AHAM further suggested that since the new list is not yet available as part of ANSI/AHAM DW-1 for formal incorporation by reference, the Department should publish the specific table containing the recommended dishware, glassware, and flatware in the rule to address manufacturers' concerns about availability. (Public Hearing Tr. p. 54)

There was considerable discussion at the public hearing that confirmed both the comparability of the new list of dishware with what is currently being used during testing, and also the availability problems regarding the ANSI/AHAM DW-1 Addendum list as DOE had proposed in the September 2002 NOPR. The Department agrees that it would be best to use the most current list of available dishware, and therefore has directly included that list in the text of the test procedure as section 2.7. This test load list supercedes the specifications for dishware included in ANSI/AHAM DW-1. Thus, when testing soil-sensing dishwashers, ANSI/AHAM DW-1 should be used for determining the types and quantities of soils and the size of a place setting, but the table in section 2.7 of the test procedure should be used for determining the specific types of dishware, glassware, and flatware. The insertion of this table in

section 2.7 (previously the section for detergent and rinse agent) alters the numbering sequence for sections 2.7 through 2.9 as they appeared in the September 2002 NOPR, and creates a new section 2.10 for preconditioning requirements (previously section 2.9). The following sections of the test procedure now include references to section 2.7 for specifying the test load of dishware, glassware, and flatware: sections 1.2, 1.13, 2.6.2, 2.6.3.1, 2.6.3.2, and 2.6.3.3 of Appendix C to Subpart B, and paragraph (f) of section 430.32 of Subpart C.

D. New Test Procedure To Measure Standby Power Consumption

The Department presented a comprehensive method for computing standby power consumption in the September 2002 NOPR. Later, however, DOE learned that the International Electrotechnical Commission (IEC) was circulating a July 12, 2002, committee draft document for measuring standby power in household electrical appliances which contained some alternate technical specifications. (IEC No. 39 at 6-9, 14-15) The IEC is a worldwide organization which publishes international standards and promotes international cooperation on questions concerning standardization in the electrical and electronic fields. Thus, in order to make the proposed dishwasher test procedure as consistent as possible with international specifications that the IEC is developing on standby power, DOE presented at the October 22 public hearing an enhanced version of the original method set out in the September 2002 NOPR, based on specifications the Department adapted from the draft IEC document. These changes addressed the definition for "standby mode" and the instrumentation requirements, as well as the measurement and calculation procedures. (Public Hearing Tr. p. 131). The Department used the discussions at the hearing and comments received to improve the test procedure as described below.

"Standby Mode" Definition

AHAM commented that the definition of standby mode in the September 2002 NOPR, "the power consumption condition when the dishwasher is connected to the main electricity supply and the door lock is unlatched" (67 FR 56242), would not be appropriate for all dishwashers. (AHAM No. 30FF at 4). AHAM stated that some new models of dishwashers may not be in the standby mode when a door is unlatched, and that some did not even have traditional doors. As a result of this comment, DOE

presented for discussion at the public hearing the following alternative definition which was based on the draft definition in the IEC document: " 'Standby mode' means the lowest power consumption mode which cannot be switched off or influenced by the user, a non-operational mode not affected by the dishwasher's primary function which may persist for an indefinite time when the dishwasher is connected to the main electricity supply and used in accordance with the manufacturer's instructions." (Public Hearing Tr. p. 132)

At the public hearing, AHAM also presented the IEC draft definition but did not include the words "a non-operational mode not affected by the dishwasher's primary function" which the IEC draft had listed as a note in its draft, but not as part of the definition itself. (AHAM No. 30FF at 4) The AHAM representative explained at the hearing that the inclusion of those words seemed like adding "redundant and unnecessary verbiage to the definition because you've already defined the fact that you're in the non-operational mode by saying it's the lowest power consumption mode that can't be switched off." (Public Hearing Tr. p. 138) The Department reviewed the text and agrees that the words AHAM cited are redundant for defining standby mode. Overall, there was broad support among commenters for drawing from the IEC expertise on this issue. For example, the OOE commented that it supported DOE's test procedure being consistent with the IEC definition. (Public Hearing Tr. p. 129) In light of the discussion at the public hearing and the comments received, the Department agrees with the criticisms of the "standby mode" definition in the September 2002 NOPR and believes that the IEC draft definition for standby mode is the better choice. Therefore, the Department has adopted it in section 1.14 of this rule. The Department's text, however, specifically names dishwashers in the definition, rather than using the more general term "appliance" which the IEC uses in its broader definition for standby mode.

New Measurement Procedures

The September 2002 NOPR proposed a procedure for the measurement of standby power which required measuring the standby energy consumption using a watt-hour meter and prorating the value over the measurement period. (67 FR 56243) Based on an AHAM comment and the IEC draft document containing a procedure for measuring standby power, DOE presented revisions to the

September 2002 NOPR at the October 22 public hearing. These revisions added provisions for measuring stable standby power consumption using a wattmeter and for measuring unstable standby power consumption using a watt-hour meter.

The modified measurement method, which is set forth in section 4.4 of the test procedure, requires allowing the dishwasher's standby power consumption to stabilize for five minutes, and then monitoring the dishwasher for an additional five minutes to determine whether the dishwasher's standby power consumption meets the criteria for stability (discussed below). If stable, the standby power could be measured directly using a wattmeter to obtain an instantaneous reading in watts. AHAM had recommended this alternative to measuring standby power in watt-hours and prorating the value for the measurement period as a way to simplify, and perhaps improve, the accuracy of the measurement. (AHAM No. 33 at 5)

The Department presented the criteria for stability as a power level drift of not more than 1 percent from the maximum observed value during the monitoring period with no cyclic or pulsing behavior. (Public Hearing Tr. p. 154) AHAM pointed out that the U.S. Technical Advisory Group had submitted comments to the IEC recommending a 5 percent drift instead of a 1 percent drift, stating that "at the levels that you're monitoring, typically three to five watts, a drift of five percent is almost negligible. One percent drift is extremely tight." (Public Hearing Tr. p. 156) The Department followed up with the IEC committee and learned that the IEC was in the process of revising its July 12, 2002, committee draft and had accepted the 5 percent drift as a revised specification. The March 7, 2003, IEC committee draft included the 5 percent specification in section 4.3.1. (IEC No. 40 at 8) In the interest of harmonization, and because DOE agrees based on the data and comments presented that the 1 percent drift tolerance is too restrictive, DOE is changing the 1 percent drift tolerance to 5 percent drift tolerance in section 4.4 of the test procedure.

The modified procedure, which is based on the March 7, 2003, IEC committee draft document, provides instructions for measuring the standby power for dishwashers which fail to meet the stability criteria presented above. In the case where the standby power varies over a cycle, the energy must be accumulated over a period of one or more complete cycles and prorated over a period of at least five

minutes in order to get the average standby power. (Public Hearing Tr. p. 154) The final rule also includes the editorial change of replacing "not less than 5 minutes" with "at least 5 minutes" to express the required time interval consistently throughout section 4.4, and retains the original NOPR method for measuring standby power using a watt-hour meter.

The Department is making these modifications to provide more flexibility in testing, to increase harmonization with the IEC, and to maintain accuracy and improve clarity of the procedure. The Department believes that permitting the use of a single point measurement using a wattmeter has no negative impact on measurement accuracy and is an acceptable alternative to measuring in watt-hours and prorating the value for the measurement period. Thus, section 4.4 of the test procedure now includes two measurement options, allowing standby power measurements using a wattmeter or a watt-hour meter.

New Instrumentation Requirements

Section 3.5 of the September 2002 NOPR defined the instrumentation requirements for the standby power meter. At the October 22 public hearing, DOE stated that it was considering an additional requirement: "The meter shall have a maximum error no greater than 1 percent of the measured value." This specification establishes a level of accuracy for the instrumentation used to measure standby power. It is the same level of accuracy already required of the watt-hour meter used for measuring the machine electrical energy consumption of the dishwasher to ensure reliable results and does not present a significant test burden. There were no written or public hearing comments regarding this proposed requirement.

Discussion at the public hearing, however, did explore the differences in the RMS (root mean squared) value and the crest factor value (a measure of the instrument's capability to get good readings during power fluctuations). The NOPR proposed a value of 5 RMS whereas the IEC draft proposed a value of 3 or more RMS. Whirlpool Corporation recommended 3 RMS, commenting that 5 RMS would potentially increase the cost of the measuring equipment beyond what is practical for this level. (Public Hearing Tr. p. 152) The OOE raised the question of whether independently modifying the requirements for total harmonic distortion (THD) and the crest factor created a conflict in the specifications, and recommended that the test procedure be consistent with the IEC

whenever possible. (Public Hearing Tr. p. 154)

Following the public hearing, DOE contacted an equipment manufacturer of power meters, Yokogawa Electric Corporation, to determine if there was any conflict in the specifications as written in the NOPR and to discuss whether 5 RMS was unnecessarily restrictive. From this discussion, DOE learned that it is important to match the crest factor with RMS and that the way DOE had written the specification in the NOPR was incorrect. The manufacturer also confirmed that the 5 RMS requirement would be more restrictive than necessary for ensuring accurate testing and would require manufacturers or private labelers to purchase equipment that was considerably more expensive.

As a result of this discussion and the public comments, DOE has concluded that reducing the crest factor requirement to 3 or more RMS would still ensure accurate testing, while at the same time reduce unnecessary manufacturer expense and establish a testing value consistent with the IEC. Therefore, DOE has adopted this change. For clarification purposes, DOE also restructured the format of the instrumentation section to present the requirements for each of the power meters separately. The requirements for the watt-hour meter to measure the machine electrical energy consumption of the dishwasher are in section 3.5. The requirements for the standby wattmeter to measure standby power are in section 3.6. The requirements for the standby watt-hour meter to measure standby power are in section 3.7.

Corrected Calculation Procedure for the Estimated Annual Energy Use

The September 2002 NOPR provided equations for incorporating standby power into the calculations of the EAOE and EAEU. Those equations only calculated the per-cycle energy consumption and did not calculate values for annual usage. In written comments, AHAM suggested a change in the way DOE calculated the EAEU in the NOPR, editing the equations for EAEU to include the number of cycles per year so that the energy consumption is calculated for annual consumption. (AHAM No. 30FF at 7) The Department agrees that this change improves the utility of the EAEU equations proposed in the NOPR. The revised equations for EAEU in section 10 CFR 430.23(c)(3) now reflect the total annual energy use of the dishwasher.

It should be noted that only the EAOE and EAEU calculations include standby power consumption; the energy factor

calculation does not include it at this time. As currently defined in the test procedure, the energy factor represents the amount of energy used during a cycle. Since standby power is energy consumed outside the wash cycle of a dishwasher, it is not a parameter in the energy factor calculation. Stakeholders supported this as an initial strategy. Both AHAM and CEE commented that they supported the proposal to include standby power in the EAOC and EAEU. However, they also voiced strong support for including standby power in the energy factor whenever in the future the energy efficiency standard for dishwashers is revised. (AHAM No. 33 at 4; CEE No. 35 at 1)

E. New Definitions

The Department presented nine new definitions in the September 2002 NOPR (67 FR 56242), all of which elicited comments. The change in the definition for “standby mode” was discussed in the previous section. This section addresses all other definitions.

Non-Soil-Sensing Dishwasher and Soil-Sensing Dishwasher

For this test procedure, the Department developed definitions for two types of dishwashers: non-soil-sensing dishwasher and soil-sensing dishwasher. The designation of dishwasher type determines whether a dishwasher will be tested with clean or soiled dishes. The two definitions use the ability or lack of ability to adjust automatically any energy consuming aspect of a wash cycle based on the soil load of the dishes as the determinant for distinguishing dishwasher type.

AHAM questioned the wording of these proposed definitions and recommended that the Department change the more general phrase of “wash cycle” to “normal wash cycle,” since the test procedure only tests the normal cycle. (Public Hearing Tr. p. 88) However, in order to provide a clear definition for the purposes of classification, DOE believes that a dishwasher should be classified as a soil-sensing dishwasher if it can sense soils and respond to that information, regardless of the cycle type. Using the more narrow specification of “normal cycle” in the definition could provide an incentive for manufacturers to have a separate button activating the use of a soil sensor so that the normal cycle would operate as a non-soil-sensing dishwasher. This cycle configuration would enable a dishwasher to be tested on the normal cycle with clean dishes, thus avoiding the more difficult and costly test method using soils. For these reasons, DOE is retaining the original

definitions with the more general reference to “wash cycle” and is not adding the word “normal” to sections 1.5 and 1.12.

Sensor Response

In the September 2002 NOPR, the Department proposed a set of six definitions to characterize the energy consumption test cycles that would result when soil-sensing dishwashers were tested with the three levels of soil used in the test procedure in sections 1.9, 1.10, 1.11, 1.15, 1.16, 1.17, and 1.18. AHAM recommended that the Department change this entire set of soil-sensing cycle definitions, suggesting that the word “response” replace the word “cycle.” It believes that the word “response” more accurately characterizes the way that a dishwasher will react to the varying soiled loads in the soil-sensing tests, since there is no actual button or setting which can initiate the cycle in the way that a traditional cycle can be selected by a dishwasher user. (AHAM No. 33 at 8)

The Department agrees that changing the word “cycle” to “response” would more accurately reflect the way a dishwasher is challenged to react to the heavy, medium, and light soil levels, and therefore DOE has adopted this change. However, by using the word “response” as part of the term to be defined, the Department believes that the later words in the proposed definitions, “that constitutes the response,” become redundant and should be eliminated. Thus, DOE has made conforming changes to the NOPR definitions set out in section 1 of this final rule. In addition, the Department has modified references to these terms throughout the test procedure to reflect the change, specifically in section 2.6.3 and its subsections, sections 5.1.2 and 5.2.2, and section 5.6.

F. Modifications To Improve the Clarity and Repeatability of the Test Procedure

Clarify the Definition of Water-Heating Dishwasher

Discussion at the October 22nd public hearing brought forth one issue that DOE had not raised in the September 2002 NOPR. CEE questioned the clarity of the existing definition of the normal cycle for water-heating dishwashers in section 1.19 of the regulations proposed in the NOPR, believing that the language as written offered a possible testing “loophole.” (Public Hearing Tr. p. 174) It was the intent of the definition, already in effect with the December 18, 2001, final rule, to require that all water-heating dishwashers heat water to 120

°F during testing. However, the wording of the definition using the phrase “may operate” did not seem to require it definitively. CEE suggested that under the current definition, one might interpret the requirement to allow the testing of a water-heating dishwasher using 50 °F water, instead of the 120 °F temperature, thereby reducing its apparent energy consumption. The CEE representative stated, “Our position is that it leaves too much wiggle room for someone to abuse that. * * * We would suggest that you require at least one cycle be heated to 120 degrees.” (Public Hearing Tr. p. 170)

Much discussion ensued at the hearing as stakeholders offered their interpretations of the definition. Whirlpool, for example, commented that a reading of the definition could be that the test procedure did not require a dishwasher that uses cold inlet, defined as nominal 50 °F, to heat at least one wash phase to 120 °F. (Public Hearing Tr. p. 173) The stakeholders at the hearing agreed that the intent of the definition was to require the necessary water-heating in at least one cycle, and several offered suggestions as to how the language might be clarified to make sure that the definition includes that requirement. AHAM and CEE submitted additional suggestions in written comments for revising the definitions. AHAM’s and CEE’s definitions proposed replacing the word “may” with the word “must.” (AHAM No. 33 at 9; CEE No. 35 at 2) After reviewing the suggested changes, the Department selected the wording submitted by AHAM for use in section 1.9 of this test procedure. The Department believes that AHAM’s proposed language most clearly states the requirement that all water-heating dishwashers must heat to at least 120 °F, regardless of the inlet temperature. The change in this definition represents a clarification of language to support the original intent of the test procedure, not a new definition.

OOE also questioned in written comments whether there is any justification for even providing the option of testing water heating dishwashers with 50 °F inlet temperature, since it would lengthen the dishwashing test cycle significantly. (OOE No. 36 at 5) Dropping the 50 °F testing option, however, was not discussed at the public hearing as part of the discussion to tighten the definition. Commenters’ concern focused on closing the testing loophole that may have existed within the definition of water-heating dishwashers for conducting 50-degree tests, and not on eliminating the 50-degree testing

option entirely. Since the new definition for water-heating dishwashers in this final rule clarifies the testing procedure for those models, the Department believes that it is appropriate to retain the option to test a dishwasher using cold water. The Department does not wish to restrict manufacturers from developing a dishwasher that heats cold water (nominal 50 °F) as long as it can meet the testing requirements.

Retain Testing Voltage of 115 Volts

The September 2002 NOPR proposed changing the testing voltage from 115 volts within 2 percent of the nameplate frequency to 120 volts \pm 2 percent to be consistent with manufacturers' instructions which specify 120 volts in the installation procedures. AHAM commented that although this change was potentially a good one, at this time, it would endanger the compliance of minimally compliant models. While AHAM conceptually supported a test voltage revision to 120 volts \pm 2 percent, it was concerned with the impact of this proposed change on the ratings of all dishwashers, especially on minimally compliant models. AHAM explained that since wattage use increases based on the square of the voltage, the tested power consumption could increase by 3 to 5 percent. Therefore, to avoid triggering the statutory requirement that the applicable energy conservation standard (presently 2.174 kWh per cycle maximum) be amended, AHAM recommended that DOE retain the existing voltage ranges. (AHAM No. 30FF at 4) OOE also recommended keeping 115 volts for the time being and suggested that DOE examine this issue in more detail when developing a new efficiency standard. (OOE No. 36 at 3)

The Department agrees that it would be more appropriate to address this change during a standards rulemaking at a future time, since it would alter the power consumption of all models and potentially impact compliance. The Department is therefore retaining the 115 volt specification in section 2.2.1 of the test procedure. In order to make the test procedure instructions more clear and precise, DOE is rewriting the existing tolerance "within two percent of 115 volts" as "115 volts \pm 2 percent," and the existing tolerance in section 2.2.2 as "240 volts \pm 2 percent." This wording change does not change in any way the meaning or effect of the existing tolerance.

Reword Definition of Drying Energy, E_D

In testing two soil-sensing dishwashers using the proposed test procedure, NIST found that more

detailed instructions were necessary to complete the determination of the drying energy, E_D , for soil-sensing dishwashers. NIST observed that while the new test procedure required testing soil-sensing dishwashers with three different soil levels, it did not specify how to compile the drying energy from the heavy response, medium response, and light response. Although there was no negative comment on this issue at the October 22nd public hearing or in written comments in response to the September 2002 NOPR, DOE is correcting this omission by defining the drying energy, E_D , for soil-sensing dishwashers as the mathematical average of the three soil level tests. This approach compiles the results of three tests to represent the normal cycle for a soil-sensing dishwasher and is consistent with the procedure for calculating representative machine energy and water consumption values. For non-soil-sensing dishwashers, the procedure is unchanged. The instructions for determining the E_D for soil-sensing and non-soil-sensing dishwashers are in section 5.2 of this rule.

The Department also determined that an additional clarification was necessary regarding the definition of the drying energy, E_D , that the NOPR described as "the energy consumed after the normal cycle is interrupted to eliminate the power-dry portion of the cycle." 67 FR 56241. The definition provides instructions on when to begin recording the drying energy: at the point separating the truncated normal cycle from the normal cycle. 67 FR 56241. Rather than representing the energy consumed by the drying portion of the cycle, the Department was concerned that use of the word "eliminate" could inaccurately suggest that the drying cycle is stopped entirely, resulting in zero drying energy. Because DOE's intent is to capture the drying energy for the normal cycle, the Department concluded that the definition should clearly state that E_D is the energy consumed using the power-dry feature. With this non-substantive clarification, the Department believes the revised definition will clearly instruct manufacturers or private labelers to measure the energy consumed during the drying cycle, correcting an oversight in the computation method for drying energy presented in the September 2002 NOPR. The revised definition, located in section 430.23 (c)(1)(i) of the test procedure, specifies E_D as the drying energy consumed after the termination of the last rinse option.

Reword Calculation of the Number of Standby Hours Per Year, H_s , and Duration of Wash Cycle, L

The test procedures for both soil-sensing, non-soil-sensing dishwashers calculate the number of standby hours per year, H_s , by subtracting the number of hours that the dishwasher is in use from the total number of hours per year. The estimated usage value is the product of the representative average number of use cycles per year, N, (215 in this final rule), and the average duration of the test wash cycle, L. In a written comment, OOE called attention to an inconsistency in the way that the manufacturers calculated the duration of the normal wash cycle for determining the number of standby hours. It stated that the computation proposed in the September 2002 NOPR for the number of standby hours was inconsistent with the method of calculating annual energy use because it multiplied the number of cycles times the normal cycle time to get the number of hours the dishwasher was operating and did not take into account any use of the truncated normal cycle. 67 FR 56244. OOE recommended "that the treatment of normal cycle time be consistent with normal cycle energy use computations—namely, that half of the normal cycles be *with* heated drying, and half *without*. It would be *highly* inappropriate to be inconsistent in this regard." (OOE No. 36 at 4, emphasis in original)

Although this change was not discussed at the hearing, the Department believes this suggested change corrects an oversight in the NOPR concerning the computation method for standby power. Not making this change would result in a slight overestimation of the annual wash time because the use of the truncated normal cycle shortens the wash time. By more accurately dividing the time spent in a wash cycle and the time spent in standby mode (for both conventional and soil-sensing dishwashers), DOE is making the calculation consistent with the current method of averaging the normal and truncated normal cycle values. Therefore, the Department has changed the definition of "L" in section 5.6 of this final rule in response to this comment to improve the accuracy in estimating the duration of the wash cycle.

In written comments after the public hearing, AHAM requested that DOE change the words "sensor medium cycle" to "sensor medium response" in the definition of L. (AHAM No. 33 at 10) The Department will make this change which is consistent with the

modification to the definition of "sensor medium response" in this rule. The Department will also make conforming changes with the additions of "sensor heavy response" and "sensor light response" to the definition of L. The Department has also modified the equation of H_s published in the NOPR by replacing "215 cycles/year" with "N" and defining "N" in section 5.6 of the final rule as "the representative average dishwasher use of 215 cycles per year." This change has no effect on the value calculated, but gives a clearer presentation of the equation, and is consistent with the definition of N presented in section 430.23 (c)(1)(i) for computing the EAOc.

Correct Typographical Error in Equation for Energy Factor (EF)

This final rule corrects a typographical error, a missing equal sign in the equation for EF on the first column of page 56242 of the September 2002 NOPR. (67 FR 56242)

Reword Flow Rate Tolerance

In section 3.3 of the September 2002 NOPR, the specifications for the water meter stated that the maximum error can be no greater than 1.5 percent for all water flow rates from one to five gallons per minute. AHAM suggested that the specification be changed to plus or minus 1.5 percent of the actual measured flow rate. This would "reflect the actual range of dishwasher operating flow rates for the tested product instead of a blanket range of one to five gallons per minute." (AHAM No. 33 at 7) Following the October 22nd public hearing, OOE submitted a comment endorsing this change. (OOE No. 36 at 4) The Department recognizes that the revised specification has the potential to reduce the testing burden for manufacturers or private labelers because the flow meter would only need to meet the specification of a maximum error of 1.5 percent at the test flow rate. Because it is irrelevant how the flow meter operates at flow rates outside of the testing range, manufacturers or private labelers would no longer be required to ensure a maximum error of 1.5 percent at flow rates outside of the test range. The Department believes this revision retains the original testing accuracy while potentially reducing instrumentation costs. Therefore, DOE has made this change in section 3.3 of the test procedure.

Reduce 140 °F Tolerance from ± 5 °F to ± 2 °F

Section 2.3.2 of the existing test procedure requires a tolerance of plus or minus 2 °F for maintaining the water

supply temperature when testing with 120 °F inlet water temperature. Section 2.3.1 requires plus or minus 5 °F when testing with 140 °F inlet water temperature. Because water temperature is an important factor in calculating energy consumption, AHAM proposed that the tolerance at 140 °F be reduced to plus or minus 2 °F as well. (AHAM No. 33 at 7) This change narrows the testing band and thereby reduces variability in the test procedure. Because of this, and because industry suggested the change and does not view it as a test burden, DOE is incorporating the change into section 2.3.1 of this final rule.

Revise Format of Measurement Descriptions of Machine Electrical Energy Consumption and Water Consumption

The measurement instructions presented in sections 4.2 and 4.3 of the September 2002 NOPR contained some minor inconsistencies regarding the placement order of machine electrical energy consumption, "M", and water consumption, "W". With some minor rewording, the Department has improved the clarity of the instructions and the consistency of the format. These editorial modifications improve the description of the measurements without changing any test procedure requirements.

G. Effective Date of New Test Procedure

In the interest of making the new test procedure effective and available for use as soon as possible, Whirlpool, AHAM, OOE, and CEE recommended that the new rule take effect 30 days after publication of the rule. (Whirlpool No. 34 at 2; AHAM No. 33 at 6; OOE No. 36 at 4; CEE No. 35 at 1) Because the new test procedure will enable manufacturers or private labelers to test soil-sensing machines with greater accuracy, DOE agrees with this comment and has adopted a 30-day effective date to facilitate accuracy in testing and labeling. Thus, as early as 30 days after this final rule is published in the **Federal Register**, a manufacturer, distributor, retailer, or private labeler may begin using the new test procedure to make representations with respect to the energy use, efficiency, or cost of energy consumed by a dishwasher model. As noted above, effective 180 days after this final rule is published in the **Federal Register**, no manufacturer, distributor, retailer, or private labeler may make any representation with respect to the energy use, efficiency, or cost of energy consumed by a dishwasher model, unless the dishwasher has been tested in

accordance with the new DOE test procedure and the representation fairly discloses the results of that testing.

H. Reporting Requirements

In the September 2002 NOPR, DOE requested comments regarding the possibility that the Department would at some future time "require manufacturers to produce reports concerning the testing of soil-sensing models pursuant to the amended test procedure." (67 FR 56238–56239) AHAM commented that the requirement of additional reports would be "misguided," believing that present reporting requirements adequately communicate energy usage of residential dishwashers. (AHAM No. 33 at 4) It commented that existing penalties would continue to deter incorrect reporting, and did not support new reporting requirements that would increase the complexity of, or the effort for, reporting energy usage. (AHAM No. 33 at 4) Whirlpool reiterated that it would not want to have to create additional documentation other than modifications to documents that it was already submitting. (Public Hearing Tr. p. 199)

The Department agrees that current reporting requirements do appear to cover the information necessary for conveying the energy usage of both non-soil-sensing and soil-sensing machines and will not require additional reports to DOE at this time. Although this final rule requires that the EAOc and EAEU must be calculated to include standby power, it does not require these figures be submitted to the DOE as part of a certification report. At the October 22 public hearing, there were no objections to calculating the EAEU in addition to the EAOc that manufacturers or private labelers already calculate. Manufacturers or private labelers should maintain their test records, including the EAOc and EAEU, as part of their permanent appliance files on each dishwasher model.

This final rule clarifies one change in a reporting requirement. The December 18, 2001, final rule (66 FR 65097) changed the definitions of compact and standard dishwashers, making place-setting capacity the determining factor instead of the width of the dishwasher. That final rule, however, did not eliminate the existing requirement in section 430.62(a)(4)(vi) to report the width of a dishwasher to DOE in certification reports. Because the width measurement no longer determines whether a dishwasher is a compact or standard model, DOE is not requiring manufacturers or private labelers to measure and report it. Instead, they

must report in their certification reports whether a dishwasher is a compact or standard model, determined according to the number of ANSI/AHAM DW-1 place settings it will hold at one time. (Section 430.62(a)(4)(vi)) This is a conforming change in light of the 2001 final rule.

I. Determination of Non-Compliant Models

Recognizing that the proposed new test procedure would alter the energy factors for soil-sensing models, the Department requested in the September 2002 NOPR that manufacturers or private labelers provide the Department with information on whether soil-sensing models that minimally comply with energy conservation standards when tested under the current test procedure would comply with the standards using the proposed new test procedure. AHAM submitted a written comment that one of the proposed changes in the test procedure would affect compliance for some dishwasher models: The proposal to change the test voltage from 115 volts to 120 volts. (67 FR 56243) If that change were made, AHAM stated that a significant number of units would no longer comply with the current energy conservation standards, since the 120 volts requirement would affect energy consumption by between three and five percent. However, if the test voltage were to remain at 115 volts, AHAM stated that it was not aware of any units that would fall out of compliance with the applicable energy conservation standards by using the proposed new test procedure. (AHAM No. 33 at 8) This issue was discussed at the October 22 public hearing, and the manufacturers agreed that aside from changing the voltage, the new test procedure would not create any compliance issues. AHAM commented at the public hearing, "We feel very confident that our response represents the entire industry in saying that there are not products that would approach minimal compliance from a soil sensor standpoint." (Public Hearing Tr. p. 115) When DOE asked the stakeholders at the hearing to confirm the Department's understanding that there are no soil-sensing models that are minimally compliant with the existing standard or that would fall out of compliance once the new test procedure is used, AHAM responded, "correct." (Public Hearing Tr. p. 115)

Since DOE has decided to maintain the test voltage at 115V and the comments and information DOE received demonstrate there are no dishwasher models that "minimally

comply" with the energy conservation standards using the existing test procedure and that would fall out of compliance once the new test procedure is used, the Department is not required by EPCA section 323(e)(2) to make any changes to energy conservation standards at this time. The Department has therefore determined that although today's amended test procedure will alter the measured efficiency or measured energy use of some dishwasher models, it is not necessary to test models with the new test procedure or to consider or make any modifications to energy conservation standards.

J. Comments Outside the Scope of This Rulemaking

The previous sections of this Supplementary Information discussed comments concerning issues which directly affect this rulemaking. Many comments submitted to DOE in this proceeding, however, made suggestions which fell outside the scope and authority of this rulemaking, but raised interesting questions for the future. For example, although stakeholders reached a general consensus that the Department is using the best available data and information to determine the weighted soil loads at this time, Consumers Union (CU) and OOE questioned the process by which DOE would update that data in the future, if consumer pre-rinsing habits change. (CU No. 27 at 1; OOE No. 36 at 4) Because pre-rinsing consumes significant amounts of water, and overall a household uses less energy if dishes are not pre-rinsed before they are placed in a dishwasher, it is possible and desirable that consumer pre-rinsing habits will decrease over time. For example, CU expressed concern about the high percentage weighting which the light soil load receives in the test procedure and felt that the energy efficiency standard should also encourage the most efficient use patterns possible, rather than reflect the current widespread practice of pre-rinsing dishes. It urged the Department to establish a specific goal for improving consumer behavior, and to include in the rulemaking a system for making periodic adjustments to the weighting factors. It recommended that DOE conduct a survey of consumer rinsing practices at least every four years, beginning in 2006. (CU No. 27 at 1) However, AHAM stated that based on industry experience, customer usage habits do not change quickly. It commented that the dishwasher industry has lobbied consumers for years to reduce or eliminate pre-rinsing with little success, as the number of pre-

rinsers has consistently hovered around two-thirds. AHAM believes that pre-rinsing practices and the associated soil levels going into the dishwasher are likely to remain stable for a long period of time. (AHAM No. 30FF at 6) The Department recognizes the importance of accurate consumer use data and urges stakeholders to inform DOE of any new information or studies. Interested parties can petition the Department to amend the test procedure when changes in consumer practices justify it. (42 U.S.C. 6293(b)(2))

General Electric (GE) requested that the ENERGY STAR® requirements stay at the current levels after the new test procedure takes effect. (GE No. 30EE at 1) Although the ENERGY STAR program is outside the scope of this test procedure rulemaking, the issue was discussed at the October 22nd public hearing. A DOE representative of the ENERGY STAR program explained that currently, the ENERGY STAR level for dishwashers is set at a level 25 percent higher (more efficient) than the minimum Federal energy efficiency standard. Recognizing that this rulemaking concerns test procedures and not energy efficiency standards, the DOE representative stated that ENERGY STAR levels would be revised only if the new test procedure also resulted in changes to the applicable energy conservation standards. As discussed above, no changes in applicable energy conservation standards are necessitated or are being made at this time. As far as standby energy was concerned, the DOE representative indicated that the ENERGY STAR program is also interested in how test results with the new test procedure come in, and how that would play into any future ENERGY STAR criteria. (Public Hearing Tr. p. 74-75)

Representatives of Energy Efficient Strategies and the Australian Greenhouse Office together submitted extensive comments addressing components of the dishwasher test procedure and broader issues concerning the U.S. testing and labeling program for appliances. Their comments addressed the following: Requiring both non-soil-sensing and soil-sensing dishwashers to use the soil test; the importance of assessing wash performance along with energy consumption to prevent the subversion of the test; incorporating the use of a reference machine with which to compare test results; measuring the energy of low power modes in addition to standby; and following the IEC test procedure as much as possible. They believed the dishwasher test procedure as proposed in the September 2002

NOPR would be too complex and prohibitively expensive from the manufacturers' perspective. Rather than relying on unquantifiable consumer behavior to set three different test levels, they stated that it would be better to use an arbitrarily selected soil load such as the IEC soil load of dishes that would provide a realistic basis for testing all dishwashers—an artificial but fair rating point for comparing products. (Australia No. 37 at 5)

These comments touch on many important questions. However, DOE rejects these suggestions. The rule DOE has decided to finalize today has received extensive scrutiny from U.S. manufacturers and stakeholders and earned significant consensus support. The commenters have not demonstrated that DOE's proposed test procedure is too complex or expensive; in fact, stakeholder consensus in support of the new test procedure and other modifications demonstrates otherwise. DOE further believes that the best empirical data available to it supports DOE's final rule. Finally the issue of coupling an assessment of wash performance with energy consumption testing is outside the scope of the Department's current appliance testing program and outside the scope of this rulemaking.

K. Implementation and Effect of New Test Procedure

Today's final rule will produce a more accurate and complete picture of dishwasher energy consumption by providing two test procedures according to dishwasher type. Manufacturers or private labelers first determine whether a dishwasher is a soil-sensing or non-soil-sensing model according to the definitions in sections 1.12 and 1.5 of the rule, and then follow instructions specific to that type of model. They must test soil-sensing dishwashers using a three-level, soil-based test which will yield an energy factor that is based on a range of challenges to the machines' automatic sensing systems. For non-soil-sensing dishwashers, manufacturers or private labelers still will use the original test procedure with clean dishes to determine the energy factor as the average of the test results from the normal and truncated normal cycles. In addition, manufacturers or private labelers must calculate the standby power consumption for any dishwasher using energy in standby mode and add that figure to the EAOC and EAUE totals, but not to the energy factor.

The test procedure for soil-sensing dishwashers requires manufacturers or private labelers to use ANSI/AHAM DW-1 to specify the size and

composition of the place settings and the quantities and types of soils which they must apply to the dishes for the series of three soil tests: Heavy, medium and light. This final rule specifies in section 2.7 of the test procedure the type of dishware for manufacturers or private labelers to use, and in section 2.8 requires only half the detergent used in the ANSI/AHAM DW-1 performance test and no rinse agent. After they run a preconditioning cycle (section 2.10), the test procedure for standard size dishwasher models requires manufacturers or private labelers to conduct the following three tests in this order: First, the test for a dishwasher's heavy response, using four soiled place settings; second, the test for the medium response, using two soiled place settings; and third, the test for the light response, using one half the soil load for a single place setting. (Section 2.6.3) Tests of compact models follow the same order, but reduce the soiled loads for the heavy and medium tests by half. The light soil load is the same as for standard models. During each of the three test runs, the test procedure requires manufacturers or private labelers to calculate the machine energy consumption, drying energy consumption, water consumption, and water energy consumption. For soil-sensing dishwashers, the energy factor will combine the results of the three tests, averaged with the following weighted percentages which represent the frequency of those consumer loads: 0.05 for the heavy response, 0.33 for the medium response, and 0.62 for the light response. (Sections 5.1.2 and 5.2.2)

The test procedure defines standby mode and details the equipment and method for calculating standby energy consumption. (Section 4.4) Two options are available for measuring standby energy consumption, depending on whether the power is stable. If the stability criteria in section 4.4 are met, manufacturers or private labelers can measure the standby power directly using a wattmeter. If the standby power consumption is not stable, that is, there is excessive variation in the power levels, then the manufacturers or private labelers must measure the power consumption using a watt-hour meter over a period of at least five minutes. Then they calculate the average standby power by dividing the value measured using the watt-hour meter by measurement period. These changes provide the means to obtain a quantitative value for the level of standby power which the dishwasher consumes. Manufacturers or private labelers must add this standby power

amount to the machine and water energy computed for the normal cycle and representative normal cycle for soil-sensing models, and include those amounts in the EAOC and EAUE.

By combining standby power consumption with the energy consumed by the wash cycle, this test procedure will calculate information that will provide consumers with more realistic and accurate estimates of the complete operating cost and energy use of each dishwasher. With the soil test, soil-sensing dishwashers have a test procedure that challenges the cycle responses which the sensing technology controls. It will provide a better approximation of the actual energy consumption of soil-sensing models as consumers use them than did the original test which used clean dishes and did not engage the action of the soil-sensing mechanisms to take a dishwasher beyond the lightest wash cycles.

III. Procedural Requirements

A. Review Under the National Environmental Policy Act of 1969

In this rule, the Department finalizes amendments to test procedures that are used to implement energy conservation standards for dishwashers. The Department has reviewed the rule under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 *et seq.*, the regulations of the Council on Environmental Quality, 40 CFR parts 1500–1508, and the Department's regulations for compliance with NEPA, 10 CFR part 1021. The Department has determined that this rule falls into a class of actions that are categorically excluded from review under NEPA. This rule will not affect the quality or distribution of energy usage and, therefore, will not result in any environmental impacts. The Department has therefore determined that this rule is covered by Categorical Exclusion A5, for rulemakings that interpret or amend an existing rule without changing its environmental effect, as set forth in the Department's NEPA regulations in appendix A to subpart D, 10 CFR part 1021. Accordingly, neither an environmental impact statement nor an environmental assessment is required.

B. Review Under Executive Order 12866, "Regulatory Planning and Review"

Today's final rule is not a "significant regulatory action" as defined in section 3(f) of Executive Order 12866, "Regulatory Planning and Review" 58 FR 51735 (October 4, 1993). Accordingly, today's action is not subject to review under the Executive

Order by the Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget.

C. Review Under Executive Order 13211, "Action Concerning Regulations That Significantly Affect Energy Supply, Distribution or Use"

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA a Statement of Energy Effects for any proposed significant energy action. A "significant energy action" is defined as any action by an agency that promulgates or is expected to lead to the promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

Today's final rule is not a significant regulatory action, nor will it have a significant adverse effect on the supply, distribution, or use of energy. Therefore, today's final rule is not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

D. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act, 5 U.S.C. 601–612, requires that an agency prepare an initial regulatory flexibility analysis for every rule which the agency must propose for public comment, by law, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. A regulatory flexibility analysis examines the impact of the rule on small entities and considers alternative ways of reducing negative impacts. 5 U.S.C. 605.

Today's rule prescribes test procedures that will be used to test compliance with energy conservation standards and labeling. Because the rule affects only test procedures and not the minimum energy efficiency standard levels for dishwasher models, the Department believes that it will not have a significant economic impact. Instead, it will provide common testing methods for all dishwasher

manufacturers or private labelers, and will improve the accuracy of information provided to consumers. The overall size of the dishwasher manufacturing industry also negates the necessity for a regulatory flexibility analysis. The Small Business Administration (SBA) considers an entity to be a small business if, together with its affiliates, it employs fewer than a threshold number of workers specified in 13 CFR part 121 according to the North American Industry Classification System (NAICS) codes. The threshold number for NAICS classification 335228, which includes dishwashers with other major household appliances, is 500 workers. Using this SBA size standard, the Department determined that there are very few small entities among dishwasher manufacturers or private labelers. Furthermore, two such companies identified as small do not manufacture or distribute any dishwasher models that would be affected by the new test procedure. Because the companies presently have no models using soil-sensing technology or standby power, their testing requirements would not change as a result of this rule. Therefore, DOE certifies that today's rule would not have a "significant economic impact on a substantial number of small entities," and the preparation of a regulatory flexibility analysis is not warranted.

E. Review Under Executive Order 13132, "Federalism"

Executive Order 13132, "Federalism," (64 FR 43255, August 4, 1999), requires that regulations, rules, legislation, and any other policy actions be reviewed for any substantial direct effects on States, on the relationship between the Federal Government and the States, or in the distribution of power and responsibilities among various levels of government. If there are substantial direct effects, then this Executive Order requires preparation of a Federalism assessment to be used in all decisions involved in promulgating and implementing a policy action.

The rule published today would not regulate or otherwise affect the States. Accordingly, DOE has determined that preparation of a Federalism assessment is unnecessary.

F. Review Under Executive Order 12630, "Governmental Actions and Interference With Constitutionally Protected Property Rights"

DOE has determined under Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights," (52 FR 8859, March 18, 1988), that this rule will not

result in any takings which might require compensation under the Fifth Amendment to the United States Constitution.

G. Review Under the Paperwork Reduction Act

No new information or record keeping requirements are imposed by this rulemaking. Accordingly, no OMB clearance is required under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

H. Review Under Executive Order 12988, "Civil Justice Reform"

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 61 FR 4729 (February 7, 1996), imposes on Executive agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. With regard to the review required by sections 3(a) and 3(b) of the Executive Order, Executive agencies must make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of the Executive Order requires agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them.

DOE reviewed today's final rule under the standards of section 3 of the Executive Order and determined that, to the extent permitted by law, the final regulations meet the requirements of those standards.

I. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91), the Department of Energy must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of

1977. (15 U.S.C. 788). Section 32 provides in essence that, where a rule contains or involves use of commercial standards, the rulemaking must inform the public of the use and background of such standards.

The September 2002 NOPR proposed a new test procedure for soil-sensing dishwashers. This test procedure incorporated a commercial standard (*i.e.*, ANSI/AHAM DW-1-1992) that previously had been incorporated into the test procedure applicable to dishwashers generally, and therefore the public already had been informed about the use and background of that standard and DOE already had performed any consultation required prior to its incorporation into a test procedure. The September 2002 NOPR also proposed incorporating an August 20, 1999 addendum to ANSI/AHAM DW-1-1992, and therefore DOE stated that as required by section 32 of the Federal Energy Administration Act of 1974, it would consult with the Attorney General and the Chairman of the Federal Trade Commission concerning its impact on competition, prior to prescribing a final rule. (67 FR 56240) This addendum specified the kind of test load (dishware and flatware) to be used in the test procedure. However, so that the test procedure will use the most up to date specifications for currently available dishware and flatware, the Department has decided not to incorporate this addendum in its test procedure. Instead, the Department is listing the specified dishware and flatware in the text of the test procedure as set forth in this final rule. Because the final rule does not incorporate by reference any new industry standards, the Department is not required by section 32(c) to consult with the Attorney General and the Chairman of the Federal Trade Commission concerning the impact on competition of any such new standards. Therefore, the Department has not done so.

J. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and tribal governments and the private sector. The Act also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing

any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under the Act (62 FR 12820). The rule published today does not contain any Federal mandate, so these requirements do not apply.

K. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. No. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any proposed rule or policy that may affect family well-being. Today's final rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

L. Review Under the Treasury and General Government Appropriations Act, 2001

The Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002). The Department has reviewed today's notice under the OMB and DOE guidelines, and has concluded that it is consistent with applicable policies in those guidelines.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will submit to Congress a report regarding the issuance of today's final rule prior to the effective date set forth at the outset of this notice. The report will state that it has been determined that the rule is not a "major rule" as defined by 6 U.S.C. 801(2).

N. Approval by the Office of the Secretary

The Secretary of Energy has approved issuance of this final rule.

List of Subjects in 10 CFR Part 430

Administrative practice and procedure, Energy conservation, Household appliances, Incorporation by reference.

Issued in Washington, DC, on August 25, 2003.

David K. Garman,

Assistant Secretary, Energy Efficiency and Renewable Energy.

■ For the reasons set forth in the preamble, the Department amends part 430 of chapter II of title 10, Code of Federal Regulations, to read as follows:

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291-6309; 28 U.S.C. 2461 note.

■ 2. Section 430.22 is amended in subpart B by revising paragraph (b)(7) to read as follows:

§ 430.22 Reference Sources.

* * * * *

(b) * * *

(7) Association of Home Appliance Manufacturers, 1111 19th Street, NW., Suite 402, Washington, DC 20036, (202) 872-5955, "American National Standard, Household Electric Dishwashers, ANSI/AHAM DW-1-1992," hereinafter referred to as ANSI/AHAM DW-1.

* * * * *

■ 3. Section 430.23 of subpart B is amended by revising paragraph (c) to read as follows:

* * * * *

(c) *Dishwashers.* (1) The Estimated Annual Operating Cost (EAOC) for dishwashers must be rounded to the nearest dollar per year and is defined as follows:

(i) When cold water (50 °F) is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

EAOC = (D_e×S) + (D_e×N×(M - (E_D/2))).

(B) For dishwashers not having a truncated normal cycle,

EAOC = (D_e×S) + (D_e×N×M)

Where,

D_e = the representative average unit cost of electrical energy, in dollars per kilowatt-hour, as provided by the Secretary,

S = the annual standby electrical energy in kilowatt-hours per year and determined according to section 5.6 of Appendix C to this subpart,

N = the representative average dishwasher use of 215 cycles per year,

M = the machine electrical energy consumption per-cycle for the normal cycle as defined in section

1.6 of Appendix C to this subpart, in kilowatt-hours and determined according to section 5.1 of Appendix C to this subpart,

E_D = the drying energy consumption defined as energy consumed using the power-dry feature after the termination of the last rinse option of the normal cycle and determined according to section 5.2 of appendix C to this subpart.

(ii) When electrically-heated water (120 °F or 140 °F) is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

$$EAO_C = (D_e \times S) + (D_e \times N \times (M - (E_D/2))) + (D_e \times N \times W)$$

(B) For dishwashers not having a truncated normal cycle,

$$EAO_C = (D_e \times S) + (D_e \times N \times M) + (D_e \times N \times W)$$

Where,

D_e , S , N , M , and E_D , are defined in paragraph (c)(1)(i) of this section, and

W = the total water energy consumption per cycle for the normal cycle as defined in section 1.6 of Appendix C to this subpart, in kilowatt-hours per cycle and determined according to section 5.4 of Appendix C to this subpart.

(iii) When gas-heated or oil-heated water is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

$$EAO_{C_g} = (D_e \times S) + (D_e \times N \times (M - (E_D/2))) + (D_g \times N \times W_g)$$

(B) For dishwashers not having a truncated normal cycle,

$$EAO_{C_g} = (D_e \times S) + (D_e \times N \times M) + (D_g \times N \times W_g)$$

Where,

D_e , S , N , M , and E_D are defined in paragraph (c)(1)(i) of this section, D_g = the representative average unit cost of gas or oil, as appropriate, in dollars per Btu, as provided by the Secretary, and

W_g = the total water energy consumption per cycle for the normal cycle as defined in section 1.6 of appendix C to this subpart, in Btu's per cycle and determined according to section 5.5 of appendix C to this subpart.

(2) The energy factor for dishwashers, EF , expressed in cycles per kilowatt-hour is defined as follows:

(i) When cold water (50 °F) is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

$$EF = 1/(M - (E_D/2))$$

(B) For dishwashers not having a truncated normal cycle,

$$EF = 1/M$$

Where,

M , and E_D are defined in paragraph (c)(1)(i) of this section.

(ii) When electrically-heated water (120 °F or 140 °F) is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

$$EF = 1/(M - (E_D/2) + W)$$

(B) For dishwashers not having a truncated normal cycle,

$$EF = 1/(M + W)$$

Where,

M , and E_D are defined in paragraph (c)(1)(i) of this section, and W is defined in paragraph (c)(1)(ii) of this section.

(3) The estimated annual energy use, $EAEU$, expressed in kilowatt-hours per year is defined as follows:

(i) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,

$$EAEU = (M - (E_D/2) + W) \times N + S$$

Where,

M , E_D , N and S are defined in paragraph (c)(1)(i) of this section, and W is defined in paragraph (c)(1)(ii) of this section.

(ii) For dishwashers not having a truncated normal cycle,

$$EAEU = (M + W) \times N + S$$

Where,

M , N and S are defined in paragraph (c)(1)(i) of this section, and W is defined in paragraph (c)(1)(ii) of this section.

(4) Other useful measures of energy consumption for dishwashers are those which the Secretary determines are likely to assist consumers in making purchasing decisions and which are derived from the application of appendix C to this subpart.

* * * * *

■ 4. Appendix C to subpart B of part 430 is revised to read as follows:

Appendix C to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Dishwashers

The provisions of this Appendix C shall apply to products manufactured after September 29, 2003. The restriction on representations concerning energy use or efficiency in 42 U.S.C. 6293(c)(2) shall apply on February 25, 2004.

1. Definitions

1.1 “AHAM” means the Association of Home Appliance Manufacturers.

1.2 “Compact dishwasher” means a dishwasher that has a capacity of less than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 (see § 430.22), using the test load specified in section 2.7 of this Appendix.

1.3 “Cycle” means a sequence of operations of a dishwasher which performs a complete dishwashing function, and may include variations or combinations of washing, rinsing, and drying.

1.4 “Cycle type” means any complete sequence of operations capable of being preset on the dishwasher prior to the initiation of machine operation.

1.5 “Non-soil-sensing dishwasher” means a dishwasher that does not have the ability to adjust automatically any energy consuming aspect of a wash cycle based on the soil load of the dishes.

1.6 “Normal cycle” means the cycle type recommended by the manufacturer for completely washing a full load of normally soiled dishes including the power-dry feature.

1.7 “Power-dry feature” means the introduction of electrically generated heat into the washing chamber for the purpose of improving the drying performance of the dishwasher.

1.8 “Preconditioning cycle” means any cycle that includes a fill, circulation, and drain to ensure that the water lines and sump area of the pump are primed.

1.9 “Sensor heavy response” means, for standard dishwashers, the set of operations in a soil-sensing dishwasher for completely washing a load of dishes, four place settings of which are soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22). For compact dishwashers, this definition is the same, except that two soiled place settings are used instead of four.

1.10 “Sensor light response” means, for both standard and compact dishwashers, the set of operations in a soil-sensing dishwasher for completely washing a load of dishes, one place setting of which is soiled with half of the gram weight of soils for each item specified in a single place setting according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22).

1.11 “Sensor medium response” means, for standard dishwashers, the set of operations in a soil-sensing dishwasher for completely washing a load of dishes, two place settings of which are soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22). For compact dishwashers, this definition is the same, except that one soiled place setting is used instead of two.

1.12 “Soil-sensing dishwasher” means a dishwasher that has the ability to adjust any energy consuming aspect of a wash cycle based on the soil load of the dishes.

1.13 “Standard dishwasher” means a dishwasher that has a capacity equal to or greater than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22), using the test load specified in section 2.7 of this Appendix.

1.14 “Standby mode” means the lowest power consumption mode which cannot be switched off or influenced by the user and

that may persist for an indefinite time when the dishwasher is connected to the main electricity supply and used in accordance with the manufacturer's instructions.

1.15 "Truncated normal cycle" means the normal cycle interrupted to eliminate the power-dry feature after the termination of the last rinse operation.

1.16 "Truncated sensor heavy response" means the sensor heavy response interrupted to eliminate the power-dry feature after the termination of the last rinse operation.

1.17 "Truncated sensor light response" means the sensor light response interrupted to eliminate the power-dry feature after the termination of the last rinse operation.

1.18 "Truncated sensor medium response" means the sensor medium response interrupted to eliminate the power-dry feature after the termination of the last rinse operation.

1.19 "Water-heating dishwasher" means a dishwasher which, as recommended by the manufacturer, is designed for heating cold inlet water (nominal 50 °F) or designed for heating water with a nominal inlet temperature of 120 °F. Any dishwasher designated as water-heating (50 °F or 120 °F inlet water) must provide internal water heating to above 120 °F in at least one wash phase of the normal cycle.

2. Testing conditions:

2.1 *Installation Requirements.* Install the dishwasher according to the manufacturer's instructions. A standard or compact under-counter or under-sink dishwasher must be tested in a rectangular enclosure constructed of nominal 0.374 inch (9.5 mm) plywood painted black. The enclosure must consist of a top, a bottom, a back, and two sides. If the dishwasher includes a counter top as part of the appliance, omit the top of the enclosure. Bring the enclosure into the closest contact with the appliance that the configuration of the dishwasher will allow.

2.2 *Electrical energy supply.*

2.2.1 *Dishwashers that operate with an electrical supply of 115 volts.* Maintain the electrical supply to the dishwasher at 115 volts ± 2 percent and within 1 percent of the nameplate frequency as specified by the manufacturer.

2.2.2 *Dishwashers that operate with an electrical supply of 240 volts.* Maintain the electrical supply to the dishwasher at 240 volts ± 2 percent and within 1 percent of its nameplate frequency as specified by the manufacturer.

2.3 *Water temperature.* Measure the temperature of the water supplied to the dishwasher using a temperature measuring device as specified in section 3.1 of this Appendix.

2.3.1 *Dishwashers to be tested at a nominal 140 °F inlet water temperature.* Maintain the water supply temperature at 140° ± 2 °F.

2.3.2 *Dishwashers to be tested at a nominal 120 °F inlet water temperature.* Maintain the water supply temperature at 120° ± 2 °F.

2.3.3 *Dishwashers to be tested at a nominal 50 °F inlet water temperature.* Maintain the water supply temperature at 50° ± 2 °F.

2.4 *Water pressure.* Using a water pressure gauge as specified in section 3.4 of this Appendix, maintain the pressure of the water supply at 35 ± 2.5 pounds per square inch gauge (psig) when the water is flowing.

2.5 *Ambient and machine temperature.* Using a temperature measuring device as specified in section 3.1 of this Appendix, maintain the room ambient air temperature at 75° ± 5 °F, and ensure that the dishwasher and the test load are at room ambient temperature at the start of each test cycle.

2.6 *Test Cycle and Load.*

2.6.1 *Non-soil-sensing dishwashers to be tested at a nominal inlet temperature of 140 °F.* These units must be tested on the normal cycle and truncated normal cycle without a test load if the dishwasher does not heat water in the normal cycle.

2.6.2 *Non-soil-sensing dishwashers to be tested at a nominal inlet temperature of 50 °F or 120 °F.* These units must be tested on the normal cycle with a clean load of eight place settings plus six serving pieces, as specified in section 2.7 of this Appendix. If the capacity of the dishwasher, as stated by the manufacturer, is less than eight place settings, then the test load must be the stated capacity.

2.6.3 *Soil-sensing dishwashers to be tested at a nominal inlet temperature of 50 °F, 120 °F, or 140 °F.* These units must be tested first for the sensor heavy response, then tested for the sensor medium response, and finally for the sensor light response with the following combinations of soiled and clean test loads.

2.6.3.1 For tests of the sensor heavy response, as defined in section 1.9 of this Appendix:

(A) For standard dishwashers, the test unit is to be loaded with a total of eight place settings plus six serving pieces as specified

in section 2.7 of this Appendix. Four of the eight place settings must be soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces, and all flatware are not soiled.

(B) For compact dishwashers, the test unit is to be loaded with four place settings plus six serving pieces as specified in section 2.7 of this Appendix. Two of the four place settings must be soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces, and all flatware are not soiled.

2.6.3.2 For tests of the sensor medium response, as defined in section 1.11 of this Appendix:

(A) For standard dishwashers, the test unit is to be loaded with a total of eight place settings plus six serving pieces as specified in section 2.7 of this Appendix. Two of the eight place settings must be soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces, and all flatware are not soiled.

(B) For compact dishwashers, the test unit is to be loaded with four place settings plus six serving pieces as specified in section 2.7 of this Appendix. One of the four place settings must be soiled according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces and all flatware are not soiled.

2.6.3.3 For tests of the sensor light response, as defined in section 1.10 of this Appendix:

(A) For standard dishwashers, the test unit is to be loaded with a total of eight place settings plus six serving pieces as specified in section 2.7 of this Appendix. One of the eight place settings must be soiled with half of the soil load specified for a single place setting according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces, and all flatware are not soiled.

(B) For compact dishwashers, the test unit is to be loaded with four place settings plus six serving pieces as specified in section 2.7 of this Appendix. One of the four place settings must be soiled with half of the soil load specified for a single place setting according to the ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22) while the remaining place settings, serving pieces, and all flatware are not soiled.

2.7 *Test Load.*

Dishware/glassware/flatware item	Primary source	Description	Primary No.	Alternate source	Alternate source No.
Dinner Plate	Corning Comcor®/Corelle®	10 inch Dinner Plate	6003893		
Bread and Butter Plate	Corning Comcor®/Corelle®	6.75 inch Bread & Butter	6003887	Arzberg	8500217100
Fruit Bowl	Corning Comcor®/Corelle®	10 oz. Dessert Bowl	6003899	Arzberg	3820513100
Cup	Corning Comcor®/Corelle®	8 oz. Ceramic Cup	6014162	Arzberg	3824732100
Saucer	Corning Comcor®/Corelle®	6 inch Saucer	6010972	Arzberg	3824731100
Serving Bowl	Corning Comcor®/Corelle®	1 qt. Serving Bowl	6003911		
Platter	Corning Comcor®/Corelle®	9.5 inch Oval Platter	6011655		
Glass-Iced Tea	Libbey		551 HT		
Flatware—Knife	Oneida®—Accent		2619KPVF		
Flatware—Dinner Fork	Oneida®—Accent		2619FRSF		
Flatware—Salad Fork	Oneida®—Accent		2619FSLF		
Flatware—Teaspoon	Oneida®—Accent		2619STSF		
Flatware—Serving Fork	Oneida®—Flight		2865FCM		

Dishware/glassware/flatware item	Primary source	Description	Primary No.	Alternate source	Alternate source No.
Flatware—Serving Spoon	Oneida®—Accent	2619STBF		

2.8 *Detergent.* Use half the quantity of detergent specified according to ANSI/AHAM DW-1 (Incorporated by reference, see § 430.22).

2.9 *Testing requirements.* Provisions in this Appendix pertaining to dishwashers that operate with a nominal inlet temperature of 50 °F or 120 °F apply only to water-heating dishwashers as defined in section 1.19 of this Appendix.

2.10 *Preconditioning requirements.* Precondition the dishwasher by establishing the testing conditions set forth in sections 2.1 through 2.5 of this Appendix. Set the dishwasher to the preconditioning cycle as defined in section 1.8 of this Appendix, without using a test load, and initiate the cycle.

3. Instrumentation

Test instruments must be calibrated annually.

3.1 *Temperature measuring device.* The device must have an error no greater than ± 1 °F over the range being measured.

3.2 *Timer.* Time measurements for each monitoring period shall be accurate to within 2 seconds.

3.3 *Water meter.* The water meter must have a resolution of no larger than 0.1 gallons and a maximum error no greater than ± 1.5 percent of the measured flow rate for all water temperatures encountered in the test cycle.

3.4 *Water pressure gauge.* The water pressure gauge must have a resolution of one pound per square inch (psi) and must have an error no greater than 5 percent of any measured value over the range of 35 ± 2.5 psig.

3.5 *Watt-hour meter.* The watt-hour meter must have a resolution of 1 watt-hour or less and a maximum error of no more than 1 percent of the measured value for any demand greater than 50 watts.

3.6 *Standby wattmeter.* The standby wattmeter must have a resolution of 0.1 watt or less, a maximum error of no more than 1 percent of the measured value, and must be capable of operating within the stated tolerances for input voltages up to 5 percent total harmonic distortion. The standby wattmeter must be capable of operating at frequencies from 47 hertz through 63 hertz. Power measurements must have a crest factor of 3 or more at currents of 2 amps RMS or less.

3.7 *Standby watt-hour meter.* The standby watt-hour meter must meet all the requirements of the standby wattmeter and must accumulate watt-hours at a minimum power level of 20 milliwatts.

4. Test Cycle and Measurements

4.1 *Test cycle.* Perform a test cycle by establishing the testing conditions set forth in section 2 of this Appendix, setting the dishwasher to the cycle type to be tested, initiating the cycle, and allowing the cycle to proceed to completion.

4.2 *Machine electrical energy consumption.* Measure the machine electrical energy consumption, M, expressed as the number of kilowatt-hours of electricity consumed by the machine during the entire test cycle, using a water supply temperature as set forth in section 2.3 of this Appendix and using a watt-hour meter as specified in section 3.5 of this Appendix.

4.3 *Water consumption.* Measure the water consumption, V, expressed as the number of gallons of water delivered to the machine during the entire test cycle, using a water meter as specified in section 3.3 of this Appendix.

4.4 *Standby power.* Connect the dishwasher to a standby wattmeter or a standby watt-hour meter as specified in sections 3.6 and 3.7, respectively, of this Appendix. Select the conditions necessary to achieve operation in the standby mode as defined in section 1.14 of this Appendix. Monitor the power consumption but allow the dishwasher to stabilize for at least 5 minutes. Then monitor the power consumption for at least an additional 5 minutes. If the power level does not change by more than 5 percent from the maximum observed value during the later 5 minutes and there is no cyclic or pulsing behavior of the load, the load can be considered stable. For stable operation, standby power, S_m, can be recorded directly from the standby watt meter in watts or accumulated using the standby watt-hour meter over a period of at least 5 minutes. For unstable operation, the energy must be accumulated using the standby watt-hour meter over a period of at least 5 minutes and must capture the energy use over one or more complete cycles. Calculate the average standby power, S_m, expressed in watts by dividing the accumulated energy consumption by the duration of the measurement period.

5. Calculation of Derived Results From Test Measurements

5.1 *Machine energy consumption.*

5.1.1 *Machine energy consumption for non-soil-sensing electric dishwashers.* Take the value recorded in section 4.2 of this Appendix as the per-cycle machine electrical energy consumption. Express the value, M, in kilowatt-hours per cycle.

5.1.2 *Machine energy consumption for soil-sensing electric dishwashers.* The machine energy consumption for the sensor normal cycle, M, is defined as:

$$M = (M_{hr} \times F_{hr}) + (M_{mr} \times F_{mr}) + (M_{lr} \times F_{lr})$$

where,

M_{hr} = the value recorded in section 4.2 of this Appendix for the test of the sensor heavy response, expressed in kilowatt-hours per cycle,

M_{mr} = the value recorded in section 4.2 of this Appendix for the test of the sensor medium response, expressed in kilowatt-hours per cycle,

M_{lr} = the value recorded in section 4.2 of this Appendix for the test of the sensor light

response, expressed in kilowatt-hours per cycle,

F_{hr} = the weighting factor based on consumer use of heavy response = 0.05,

F_{mr} = the weighting factor based on consumer use of medium response = 0.33,

F_{lr} = the weighting factor based on consumer use of light response = 0.62.

5.2 *Drying energy.*

5.2.1 *Drying energy consumption for non-soil-sensing electric dishwashers.* Calculate the amount of energy consumed using the power-dry feature after the termination of the last rinse option of the normal cycle. Express the value, E_D, in kilowatt-hours per cycle.

5.2.2 *Drying energy consumption for soil-sensing electric dishwashers.* The drying energy consumption, E_D, for the sensor normal cycle is defined as:

$$E_D = (E_{Dhr} + E_{Dmr} + E_{Dlr})/3$$

Where,

E_{Dhr} = energy consumed using the power-dry feature after the termination of the last rinse option of the sensor heavy response, expressed in kilowatt-hours per cycle,

E_{Dmr} = energy consumed using the power-dry feature after the termination of the last rinse option of the sensor medium response, expressed in kilowatt-hours per cycle,

E_{Dlr} = energy consumed using the power-dry feature after the termination of the last rinse option of the sensor light response, expressed in kilowatt-hours per cycle.

5.3 *Water consumption.*

5.3.1 *Water consumption for non-soil-sensing dishwashers using electrically heated, gas-heated, or oil-heated water.*

Take the value recorded in section 4.3 of this Appendix as the per-cycle water energy consumption. Express the value, V, in gallons per cycle.

5.3.2 *Water consumption for soil-sensing dishwashers using electrically heated, gas-heated, or oil-heated water.*

The water consumption for the sensor normal cycle, V, is defined as:

$$V = (V_{hr} \times F_{hr}) + (V_{mr} \times F_{mr}) + (V_{lr} \times F_{lr})$$

Where,

V_{hr} = the value recorded in section 4.3 of this Appendix for the test of the sensor heavy response, expressed in gallons per cycle,

V_{mr} = the value recorded in section 4.3 of this Appendix for the test of the sensor medium response, expressed in gallons per cycle,

V_{lr} = the value recorded in section 4.3 of this Appendix for the test of the sensor light response, expressed in gallons per cycle,

F_{hr} = the weighting factor based on consumer use of heavy response = 0.05,

F_{mr} = the weighting factor based on consumer use of medium response = 0.33,

F_{lr} = the weighting factor based on consumer use of light response = 0.62.

5.4 *Water energy consumption for non-soil-sensing or soil-sensing dishwashers using electrically heated water.*

5.4.1 *Dishwashers that operate with a nominal 140 °F inlet water temperature, only.* For the normal and truncated normal test cycle, calculate the water energy consumption, W, expressed in kilowatt-hours per cycle and defined as:

$W = V \times T \times K$

Where,

V = water consumption in gallons per cycle, as determined in section 5.3.1 of this Appendix,

T = nominal water heater temperature rise = 90 °F,

K = specific heat of water in kilowatt-hours per gallon per degree Fahrenheit = 0.0024.

5.4.2 *Dishwashers that operate with a nominal inlet water temperature of 120 °F.*

For the normal and truncated normal test cycle, calculate the water energy consumption, W, expressed in kilowatt-hours per cycle and defined as:

$W = V \times T \times K$

Where,

V = water consumption in gallons per cycle, as determined in section 5.3.1 of this Appendix,

T = nominal water heater temperature rise = 70 °F,

K = specific heat of water in kilowatt-hours per gallon per degree Fahrenheit = 0.0024.

5.5 *Water energy consumption per cycle using gas-heated or oil-heated water.*

5.5.1 *Dishwashers that operate with a nominal 140 °F inlet water temperature, only.*

For each test cycle, calculate the water energy consumption using gas-heated or oil-heated water, W_g , expressed in Btu's per cycle and defined as:

$W_g = V \times T \times C / e$

Where,

V = reported water consumption in gallons per cycle, as determined in section 5.3.2 of this Appendix,

T = nominal water heater temperature rise = 90 °F,

C = specific heat of water in Btu's per gallon per degree Fahrenheit = 8.2,

e = nominal gas or oil water heater recovery efficiency = 0.75.

5.5.2 *Dishwashers that operate with a nominal inlet water temperature of 120 °F.*

For each test cycle, calculate the water energy consumption using gas heated or oil heated water, W_g , expressed in Btu's per cycle and defined as:

$W_g = V \times T \times C / e$

Where,

V = reported water consumption in gallons per cycle, as determined in section 5.3.2 of this Appendix,

T = nominal water heater temperature rise = 70 °F,

C = specific heat of water in Btu's per gallon per degree Fahrenheit = 8.2,

e = nominal gas or oil water heater recovery efficiency = 0.75.

5.6 *Annual standby energy consumption.* Calculate the estimated annual standby

energy consumption. First determine the number of standby hours per year, H_s , defined as:

$H_s = H - (N \times L)$

Where,

H = the total number of hours per year = 8766 hours per year,

N = the representative average dishwasher use of 215 cycles per year,

L = the average of the duration of the normal cycle and truncated normal cycle, for non-soil-sensing dishwashers with a truncated normal cycle; the duration of the normal cycle, for non-soil-sensing dishwashers without a truncated normal cycle; the average duration of the sensor light response, truncated sensor light response, sensor medium response, truncated sensor medium response, sensor heavy response, and truncated sensor heavy response, for soil-sensing dishwashers with a truncated cycle option; the average duration of the sensor light response, sensor medium response, and sensor heavy response, for soil-sensing dishwashers without a truncated cycle option.

Then calculate the estimated annual standby power use, S, expressed in kilowatt-hours per year and defined as:

$S = S_m \times ((H_s) / 1000)$

Where,

S_m = the average standby power in watts as determined in section 4.4 of this Appendix.

■ 5. Section 430.32 of subpart C is amended by revising paragraph (f) to read as follows:

§ 430.32 **Energy and water conservation standards and effective dates.**

* * * * *

(f) *Dishwashers.* The energy factor of dishwashers manufactured on or after May 14, 1994, must not be less than:

Product class	Energy factor (cycles/kWh)
(1) Compact Dishwasher (capacity less than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 [Incorporated by reference, see § 430.22] using the test load specified in section 2.7 of Appendix C in subpart B)	0.62
(2) Standard Dishwasher (capacity equal to or greater than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 [Incorporated by Reference, see § 430.22] using the test load specified in section 2.7 of Appendix C in subpart B)	0.46

* * * * *

■ 6. Section 430.62 is amended in subpart F by revising paragraph (a)(4)(vi) to read as follows:

§ 430.62 **Submission of data.**

(a) * * *

(4) * * *

(vi) Dishwashers, the energy factor expressed in cycles per kilowatt-hour.

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DEPARTMENT OF HOMELAND SECURITY

Bureau of Customs and Border Protection

19 CFR Part 12

[CBP Dec. 03-25]

RIN 1515-AD38

Extension of Emergency Import Restrictions Imposed on Ethnological Material From Cyprus

AGENCY: Customs and Border Protection, Department of Homeland Security.

ACTION: Final rule.

SUMMARY: In T.D. 99-35, the Customs Regulations were amended to reflect the imposition of emergency import restrictions on certain ethnological material from Cyprus. These restrictions were imposed pursuant to a determination by the United States Information Agency issued under the terms of the Convention on Cultural Property Implementation Act in accordance with the 1970 United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. Recently, the United States Department of State determined that conditions continue to warrant the imposition of these emergency import restrictions for a period not to exceed 3 years. Thus, this document amends the Customs regulations to reflect that the emergency import restrictions currently in place continue, without interruption, for 3 years from September 4, 2003. T.D. 99-35 contains the Designated List describing the Byzantine ecclesiastical and ritual ethnological material from Cyprus to which the restrictions apply.

EFFECTIVE DATE: This regulation and the extension of emergency import restrictions reflected in this regulation become effective on September 4, 2003.

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