

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.