

temperatures serves to identify any changes in test results of the test cloth due to water temperature variation. The use of 4 and 15 minute spin times bounds the various spin cycle times in a typical clothes washer. Thus, by requiring the averaging of this combination of test cycles, the test procedure created a representative profile of the spin and extraction behavior of the test cloth. (10 CFR part 430, subpart B, appendix J1, sections 2.6.5.3.6 and 2.6.6.1)

When the Department published the energy conservation standards final rule for clothes washers on January 12, 2001, the rule included revisions to the 1997 test procedure based on DOE's May 2000 report dealing with the energy test cloth, RMC, extractor testing, and the correction factors. The Department believed that the system of using the correction factors would enable those conducting future tests to use new lots of test cloth in a manner consistent with the base test cloth, and produce reliable RMC values. In addition, the Department incorporated in their entirety AHAM's comments and the Joint Stakeholders Comment requesting minor editorial changes to help clarify both appendices J and J1. (Docket No. EE-RM-94-403, AHAM, Nos. 197 and 199, and Joint Comment, No. 204)

Although the revised appendix J1 was published as part of the 2001 final rule for clothes washers, appendix J1 was available for informational use only until the new clothes washer standards would take effect on January 1, 2004. Initial experimental tests using the new procedure to certify lots of test cloth using the correction factors worked well until several new lots again appeared to have unusually high RMC at the 50g test level. Correction factors notwithstanding, several manufacturers noticed that the corrected RMC values for these newer lots of test cloth were still significantly different from the RMC values determined from earlier lots of test cloth that had been tested in the same clothes washer. When the Department learned that these later lots of test cloth were producing 10 percent higher RMC values than the test cloth reference base, DOE conducted tests to explore the new inconsistency issue which the correction factor system in appendix J1 did not seem to have fixed. Test results confirmed that the RMC value at 50g shifted the correction curve so that the corrected RMC values at 100g, the typical spin g level of many vertical axis washers, were inconsistent with corrected RMC results using earlier lots of test cloth. Retests of both early and later lots of test cloth confirmed a

basic lack of repeatability of 50g spin tests.

Ongoing RMC tests in the extractor, however, indicated that spin g levels of 100g's or more continued to produce repeatable results with good lot-to-lot consistency of the RMC compared to the g-curve shape. Only the 50g spin tests were producing the inconsistency and repeatability problems.

The Department had originally selected the 50g spin level as the lower end with which to bracket the spin speeds of clothes washers for computing the average RMC value. The other spin levels were 200g, 350g, and 500g, if a washer could achieve that high a spin speed. In discussions with clothes washer manufacturers regarding the repeatability problems with the 50g spin level, the Department learned that clothes washers use 50g spins only in delicate cycles and as an optional slow spin that is available in a limited number of models. Because it was not a commonly used spin cycle, DOE, AHAM and the clothes washer manufacturers agreed that it would be better to use the more dependable 100g spin speed as the lower end of the range of spin speeds. A linear least squares fit test cloth correction procedure based on 100g and greater RMC test data will result in more reliable correction factors for the vast majority of clothes washer models in production.

In a letter to DOE dated April 2, 2003, AHAM requested that the Department implement this change in the test procedure. (AHAM No. 1 at 1) Because the 50g anomalies discussed above were unexpected, AHAM also recommended in the letter that a statistical procedure be adopted to recognize any other unexpected anomaly that might occur in future lots of energy test cloths. This statistical test will identify deviations in RMC as compared with g-curve shape beyond the magnitude where the linear least squares fit correction factor is appropriate. In statistical terms, these anomalies are referred to as a "lot-to-lot interactive effect"—a lot-to-lot difference in characteristics that produces a different relationship of RMC to g, spin time, and/or final rinse temperature.

A "lot-to-lot interactive effect" statistical test that could be used to screen out lots whose RMC as compared with g-behavior is inconsistent with the baseline lot is a standard statistical procedure called "analysis of variance" or "ANOVA." As applied to new lots of energy test cloth, the ANOVA statistical test will detect the extent of the deviation of the shape of the RMC compared to the g-curve of a given lot from the shape of the RMC compared to

the g-curve of the baseline lot. It would have detected the peculiarity of the RMC values at 50g in the later lots running very high relative to the RMC values at 100, 200, or 350g, compared to the baseline lot. Tests of new lots of cloth using the 100g (instead of 50g), 200g, and 350g extractor test points have thus far all satisfied the ANOVA test criteria for an acceptable lot. The Department expects that the ANOVA test will detect any unanticipated RMC compared to g-curve shape deviation in future lots.

II. Discussion

In this direct final rule, the Department is correcting the typographical error in Table 2.6.5 of appendix J1 (10 CFR part 430, subpart B, appendix J1, section 2.6.5), modifying the procedure for developing the correction factors for new production lots of energy test cloth used in the test procedure for clothes washers, and introducing a second statistical test to validate new lots of energy test cloth.

A. Correction of the Typographical Error in Table 2.6.5 of Appendix J1

In this direct final rule, the Department is correcting the typographical error in Table 2.6.5 of appendix J1, by changing 14 minutes to 4 minutes. (66 FR at 3331–33; 10 CFR part 430, subpart B, appendix J1, section 2.6.5) Section 2.6.5.3.6 of appendix J1 specifies spin times of 4 and 15 minutes (66 FR at 3332) and the May 2000 report documents that these are the intended spin times selected to bracket the range of spin times commonly used in production clothes washers. All extractor testing to derive correction factors has been carried out with 15 minute and 4 minute spin times at both cold and warm soak temperatures.

B. Determination of Correction Factors for New Lots of Energy Test Cloth

In this direct final rule, the Department is modifying the procedure for developing the correction factors for new production lots of energy test cloth by replacing the extractor test points at 50g with 100g test points. The linear least squares fit to the baseline set of RMC's is otherwise unchanged. The Department has confirmed through tests of new lots of test cloth in the extractor and analysis of previous data that RMC, g forces, spin time, and temperature at spin g levels at 100g's or more, continue to produce repeatable results with good lot-to-lot consistency of the RMC compared to g-curve shape. The 50g test point, which DOE had selected to provide an all-inclusive range of spin g levels, can be deleted with minimal