

test programs that indicated that ASTM C 1289 is the most reliable aging method for cellular plastic insulation with impermeable facings blown with non-air agents.<sup>36</sup>

FPSA also supported adoption of ASTM C 1303 for unfaced and permeable faced products. FPSA recommended the use of a five-year aged value disclosure, which has been given serious consideration in Canada. It urged that a substantively comparable consensus standard should be adopted for faced products. FPSA suggested that the Commission retain currently acceptable tests (such as the 180-day value) for comparison purposes. It also pointed out that ASTM C 591 is outdated and reflects the current FTC guideline for long-term aging. FPSA also noted that expanded polystyrene products are not subject to aging. Finally, FPSA maintained that the 180-day value is not an accurate reflection of long-term aging of polyisocyanurate products, although it is acceptable for polystyrene because of the different aging curves pertaining to the two products.<sup>37</sup>

ORNL and DOE supported the adoption of ASTM C 1303 because, according to ORNL, it represents a clear, specific, industry consensus standard for unfaced foam products, to the exclusion of the unspecific "or another reliable procedure" the Rule now allows. Alternative methods are inadequate according to ORNL, because it contends the elevated temperature method, which is not correlated to results in normal use, and the 180-day method ignores long-term aging that occurs in all but the thinnest products. ORNL supported direct aging of impermeable-faced foam products because, it maintained, no satisfactory aging method exists, and tests show that some products age at the same rate as unfaced products while others show little aging.<sup>38</sup>

ORNL also indicated, in a late comment filed in response to statements made in other comments regarding the C 1303 test and the thickness of specimens, that the C 1303 test had been revised and significantly improved. ORNL challenged the assertion that C 1303 cannot account for foam products of different thicknesses. According to ORNL, variation in aging behavior with foam thickness is the very basis for the test procedure's methodology. ORNL also argued that the 180-day full-thickness R-value fails to provide necessary information to building

designers and should not be compared to the R-value of competing products that do not undergo the aging process. ORNL contended that, in contrast, C 1303 provides the product's time-averaged R-value over the product's lifetime, and accurately credits both the high thermal resistance during early years of product use and the lower values during later years.<sup>39</sup>

#### Discussion

In considering amendments to the R-value Rule, the Commission, among other things, looks to ensure that consumers receive, wherever possible, the most accurate, dependable information that is reasonably available for residential insulation products. Generally, the Rule requires the use of certain standards to ensure that industry members take into account factors such as aging or settling that can affect the R-value of material. Even if there are no standards for a particular home insulation product, that product is still covered by the Rule and manufacturers and sellers must use a reliable method that will provide a reasonable basis for their R-value claims. If the method used is unreliable and their claims are thus unsubstantiated, they could be subject to enforcement action by the Commission. The Commission does not develop the technical standards for determining the R-value for various types of residential insulations. Instead, it generally looks to those tests that are considered to be reasonable by industry members, academicians, government experts, and others in the technical community.

The comments discussed above suggest industry concerns that the incorporation of new consensus standards may create a real or perceived disadvantage for manufacturers of certain types of insulation. For example, there is disagreement regarding the application of ASTM C 1303 to insulation subject to the effects of aging. Some critics of the standard emphasize the relatively narrow scope of the test, while others maintain that it should not be incorporated into the Rule at all. In contrast, those who endorse the standard believe it would improve the accuracy of the R-values calculated for the products. There is also a Canadian standard (Can/ULC-S 770 "Standard for Determination of Long Term Thermal Resistance of Closed Cell Thermal Insulating Foams") that is designed to account for the effects of aging on the R-value of cellular plastic insulation. Work is ongoing to improve both ASTM C 1303 and S 770 and reconcile some

of the differences in the two approaches.<sup>40</sup>

The Commission recognizes the need to amend the Rule, when necessary, so that it reflects testing improvements that will provide more accurate information for consumers. The Commission, however, does not propose to amend section 460.5(a)(1) of the Rule to require the use of ASTM C 1303 for homogeneous, unfaced, rigid closed cell polyurethane, polyisocyanurate, and extruded polystyrene insulations. As discussed above, ASTM C 1303 has limited applicability because it only applies to unfaced, homogeneous material. If the FTC adopted this procedure, it is likely very similar products (e.g., insulation boards with paper facing) would continue to be tested under the older approach (the "180-day" accelerated aging test). The Commission is reluctant to incorporate the C 1303 procedure into the Rule at this time because it is unclear whether it is sufficiently broad and adequately developed to warrant its incorporation as a legal requirement for all manufacturers of cellular plastic insulation.

Nevertheless, the Commission is interested in seeking comments on this evolving issue and may reconsider its views if warranted by the comments. The Commission seeks comment on whether the new standards (ASTM C 1303 and Canadian S 770) are sufficiently developed to be imposed on all industry members as a legal requirement in the R-value Rule. In particular, the Commission requests more information regarding the scope of applicability of C 1303 (e.g., for faced and unfaced boards) and likely changes to the procedures in the future. In addition, the Commission also requests comment on whether the differences in results achieved by C 1303 as compared to the current procedure (180-day test) are significant at smaller board thicknesses and whether such thicknesses are prevalent in the residential insulation market. The Commission also would appreciate information about the expected impact that the use of this procedure would have on consumer buying decisions.

If the comments provide new and significant information clearly indicating that ASTM C 1303 should be incorporated into the Rule, the Commission may consider amending the Rule to require use of C 1303 (or perhaps S 770) for those products

<sup>36</sup> Celotex (7), p. 2.

<sup>37</sup> FPSA (8), pp. 2-6.

<sup>38</sup> ORNL-1 (17), p. 1; USDOE (20), p. 1.

<sup>39</sup> ORNL-2 (21), pp. 1-2.

<sup>40</sup> See Stovall et al., "A Comparison of Accelerated Aging Test Protocols for Cellular Foam Insulation," in *Insulation Materials: Testing and Applications: 4th Volume*, ASTM International (2002).