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August 30, 2016

Federal Trade Commission
Office of the Secretary
600 Pennsylvania Avenue NW
Suite CC–5610 (Annex B)
Washington, DC 20580

SUBJECT: 16 CFR part 460—R-value Rule Review, File No. R811001

On behalf, of the Polyisocyanurate Insulation Manufacturers Association (PIMA), I wish to thank you for the opportunity to offer public comments regarding the Commission's 16CFR part 460 – R-value Rule. PIMA serves as the unified voice of the rigid polyiso industry, proactively advocating for safe, cost-effective, sustainable and energy-efficient construction. PIMA's membership consists of manufacturers and marketers of polyiso insulation and suppliers to the industry. Our members account for a majority of all of the polyiso produced in North America.

In response to the Commission's overall request for comments regarding the R-value Rule, PIMA and its members concur that the Rule provides a benefit to consumers at little or no cost to the suppliers of home insulation or to consumers themselves. In addition, we agree that the Rule has a positive impact on the flow of accurate information to consumers and that the rule has generated a high degree of industry compliance in regard to the accurate reporting of insulation R-value. As a result, we see no need at this time to modify the overall mission and objectives of the Rule.

However, we wish to provide comments regarding several specific questions posed by the FTC in the request for public comment. In the request, the Commission posed the following questions regarding the aging of cellular plastics, specifically to ensure consistency among R-value claims:

1. Should the Commission amend the Rule to require ASTM C1303 (''Standard Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation'') or a different test?
2. If so, to which products should this test apply?

In response to these questions, we wish to submit the following comments:

Approximately 10 years after the publication of the FTC Rule in 1979, a joint industry and government research project was launched with a mission to better understand and quantify the aging of closed cell foam plastic insulation due to the gradual change in cell gas composition. Participants in this research project included Oak Ridge National Laboratory (ORNL) of the Department of Energy (DOE), the Polyisocyanurate Insulation Manufacturers Association (PIMA), the Society of Plastics Industry (SPI), and the National Roofing Contractors Association (NRCA), and the results of this research were published in a widely-referenced paper delivered in September, 1995 at the 11th Conference on Roofing Technology, September in Gaithersburg, MD (Graves et al., 1995). This paper provided test data based on a

laboratory method of accelerating the aging of closed-cell foam plastic insulation using a process called "slicing and scaling." The "slicing" portion of the test method refers to the cutting of foam insulation samples of a given thickness into a number of thinner slices. This slicing process has been demonstrated to accelerate changes in cell gas composition without exposing the samples to extremes of temperature and pressure that might damage the basic cell structure of the foam insulation. The "scaling" portion of the test method refers to a mathematical calculation based on Fick's Law for one-dimensional diffusion that may be used to predict the effective R-value of the insulation after five years of normal aging exposure.

Based on the activities and results of this joint industry/government research initiative, a new task group was formed at ASTM in 1990 with the mission of developing a standardized test method for measuring the aged R-value of closed-cell foam plastic insulation using the new slicing and scaling method. This test method was first published in 1995 as ASTM C 1303 ("Standard test method for estimating the long-term change in the resistance of unfaced, rigid, closed-cell plastic foams by slicing and scaling under controlled laboratory condition"). In 2003 the test method was refined to be prescriptive in nature, and the name of test method was changed to "Standard test method for predicting long-term thermal resistance of closed-cell foam insulation." The revision in the name of the test method led to the widespread adoption of the acronym "LTTR" to refer to thermal resistance values representing the "long-term thermal resistance" measure obtained by ASTM C 1303.

Between 2007 and 2012, the test method was subjected to a ruggedness study conducted by Oak Ridge National Laboratories (ORNL), and the results of the ruggedness study led to a few minor changes in sampling procedures that increased the consistency and reliability of the test method (Stovall, 2012). After the successful completion of ruggedness testing, ASTM C1303 has been recognized throughout North America as the best and most reliable measure of the long term thermal performance of closed cell foam insulation.

Given the broad acceptance and demonstrated reliability of the test method, it should be considered to be among the best available testing tools to meet the objective of the R-value Rule to ensure consistency among R-value claims for many closed-cell foam insulation products. However, it should be noted that the test method described in the standard is limited to specific types of rigid closed-cell foam insulation types. Specifically, Section 1.3 of the standard states:

> "This test method is limited to unfaced or permeably faced, homogeneous materials. This method is applied to a wide range of rigid closed-cell foam insulation types, including but not limited to: extruded polystyrene, polyurethane, polyisocyanurate, and phenolic. *This test method does not apply to impermeably faced rigid closed-cell foams*…" (ASTM C1303-14) (*Italics added.)*

Because of the stated limitations of ASTM C1303, the standard may be used to measure the long-term thermal resistance (R-value) of many closed-cell foam insulation products covered by the Rule, but there are several important exceptions. Although the majority of closed-cell foam insulations available to consumers are either unfaced or covered by a permeable facer, there are several closed-cell foam insulation products widely used by consumers that incorporate an impermeable facer, typically aluminum foil or an aluminum foil laminate. These products with impermeable facers include:

- ASTM C-1289 Type 1, Class 1 (Polyisocyanurate with aluminum foil facers over a non-reinforced core foam)
- ASTM C-1289 Type 1, Class 2 (Polyisocyanurate with aluminum foil facers over a glass fiber reinforced core foam)

The key difference between the two products listed above and other closed-cell foam products (either unfaced or covered by a permeable facer) is that the impermeable, or gas-tight, nature of aluminum foil significantly restricts the diffusion of blowing agent gasses from the product over time which cause these products to not meet the underlying requirements for valid application of ASTM C1303. As a result, ASTM C518, the test measure used for almost all other building thermal insulation products, continues to be the recognized thermal performance test method for the aluminum foil faced polyisocyanurate products identified above.

Accordingly, we recommend that ASTM C-1303 be incorporated into the R-value Rule as the correct R-value test method for all closed-cell foam products that are either unfaced or incorporate a permeable facer. However, ASTM C518 should continue to be used as the correct R-value test method for closed-cell foam products that incorporate an impermeable or gas-tight facer, including ASTM C-1289 Type 1 and Type 2 polyisocyanurate insulation products.

Again, thank you for the opportunity to submit these comments, and please don't hesitate to contact me if you have any questions.

Yours very truly,

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References:

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