

covered by the test procedure.⁴¹ It is likely that such an amendment would displace the 180-day test that is generally used currently for such products. Accordingly, commenters who oppose the incorporation of C 1303 into the Rule and believe that the 180-day test is adequate should submit their views to the Commission.

Although the Commission is not proposing to incorporate ASTM C 1303 into the Rule at this time, it is proposing to amend the Rule to require that other types of polyurethane, polyisocyanurate, and extruded polystyrene insulation be aged using, where appropriate, ASTM C 1029–96 (“Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation”), ASTM C 591–94 (“Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation”), and ASTM C 578–95 (“Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation”).⁴² For all other polyurethane, polyisocyanurate, and extruded polystyrene insulation subject to aging but not specifically covered by one of the procedures listed above, industry members must use the procedure in paragraph 4.6.4 of GSA Specification HH–I–530A or another reliable procedure. The Commission seeks comment on whether the incorporation of these procedures into the Rule would be appropriate and whether these procedures raise the same or similar types of concerns associated with ASTM C 1303 as discussed above.

b. Reflective Insulations

Background

In the ANPR, the Commission discussed whether the Rule should require that reflective (aluminum foil) insulation products be tested for

emissivity and R-value “using samples that fully reflect the effect of aging” on the product’s emissivity and R-value. In particular, the Commission raised concerns about the effects of the accumulation of dust or corrosion on the foil. Because the claims for all types of home insulation products should take into account factors that affect the products’ thermal performance, the ANPR invited comment on whether dusting or corrosion of reflective insulations in actual applications is a problem resulting in lower R-values than claimed, on the extent of any degradation of R-value, and on how the effect of dusting or corrosion on R-value could most accurately be determined.

Comments

Several comments suggested that the collection of dust on foil can significantly decrease the material’s thermal performance. NAIMA maintained that evidence supports that dusting and corrosion on reflective insulations have a detrimental effect on the product’s R-value. NAIMA stated that a satisfactory test method for determining the R-value of reflective insulation must be able to account for the debilitating effect of dust and corrosion on the performance capacity of the insulation.⁴³ According to NAIMA, DOE’s Radiant Barrier Attic Fact Sheet (June 1991) reported laboratory measurements verifying that dust on the surface of aluminum foil increases the product’s emissivity and decreases its reflectivity. NAIMA stated that DOE concluded that dust or other particles on the exposed surface of a radiant barrier will reduce its effectiveness and, therefore, reflective insulations installed in locations that collect dust or other surface contaminant will have a decreasing benefit over time. NAIMA asserted that when DOE monitored reflective insulations installed in a dusty attic, DOE observed that 50% of the insulation’s effectiveness dissipated after the first year of installation.⁴⁴ According to NAIMA, DOE’s findings have been repeated in other studies.⁴⁵

RIMA contended that foil is not subject to significant aging due to corrosion because it oxidizes naturally, providing corrosion protection. RIMA asserted furthermore that ASTM C 1224 (“Standard Specification for Reflective Insulation for Building Applications”)

requires testing for corrosion. RIMA maintained that dust was not a great concern for foil because, pursuant to C 1224, these materials are installed in closed-cell cavities regardless of orientation, thus preventing or minimizing dust.⁴⁶

Discussion

The Commission recognizes that the accumulation of dust or corrosion on foil can be significant enough to affect performance. However, as RIMA pointed out, the degree to which performance is affected will depend on the foil’s application. As a general matter, reflective insulations installed in locations that collect dust or experience surface contamination will have a decreasing benefit over time. Claims for all types of home insulation products should take into account factors that affect the products’ thermal performance. Accordingly, while the Commission does not believe an amendment to the Rule is warranted, it notes that manufacturers should always take into account factors that affect their products’ thermal performance when making performance claims for foil products, especially when there is a reasonable expectation that the products will be installed in locations associated with significant dust accumulation. The same holds true for any effects that corrosion may have on the long-term performance of reflective insulations.

2. Settling

a. Loose-Fill and Stabilized Insulations in Attics

In the original rulemaking proceeding, the Commission determined that all dry-applied loose-fill insulation products tend to settle after being installed in open (or unconfined) areas such as attics. Settling reduces the product’s thickness, increases its density, and affects its total R-value. The amount of settling depends on several factors, including the raw materials and manufacturing process used, and the installer’s application techniques (which affect the insulation’s initial thickness and density). 44 FR at 50228.

To ensure that claims made to consumers are based on long-term thickness and density after settling, section 460.5(a)(2) of the Rule requires that the R-value of each dry-applied loose-fill home insulation product be determined at its “settled density.” The Rule requires that manufacturers of dry-applied loose-fill *cellulose* insulation for attic applications test and disclose the R-value (as well as coverage area and related information) at the long-term,

⁴¹ The text of such an amendment would appear in section 460.5(a)(1) of the Rule and would likely read: “For polyurethane, polyisocyanurate, and extruded polystyrene, the tests must be done on samples that fully reflect the effect of aging on the product’s R-value. To measure the effect of aging for unfaced homogeneous rigid closed cell plastic foams, follow the procedure in ASTM C 1303–95 (“Estimating the Long-Term Change in the Thermal Resistance of Unfaced Rigid Closed Cell Plastic Foams by Slicing and Scaling Under Controlled Laboratory Conditions”).” The Commission may also consider adopting Can/ULC-S 770 in lieu of C 1303.

⁴² The Commission is not proposing to require ASTM C 1289 (“Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board”) as suggested by some commenters. The current version of this test procedure, ASTM C 1289–02, requires the use of the Canadian test procedure for aging (S 770) which appears in C 1289 as an annex. Because the Commission has decided not to include C 1303 (or S 770) in the Rule at this time, the Commission is not going to require the same or equivalent aging procedure through C 1289.

⁴³ NAIMA (9), pp.11–12. AFS echoed NAIMA’s concerns, contending that dust can create emittance problems for foil in laid down, face-up attic applications, but not in face-down applications. AFS (14), p. 1.

⁴⁴ *Id.* at Appendix 15.

⁴⁵ *Id.* at Appendix 16.

⁴⁶ RIMA (19), p. 1.