§ 1209.5 Test procedures for corrosiveness.

This section prescribes the procedures for determining the corrosiveness of cellulose insulation. Cellulose insulation shall be tested for corrosiveness using the measured settled density, obtained by following the test procedure at §1209.4, to calculate the amount of distilled or deionized water to add to the test specimens. Determination of corrosiveness shall be in accordance with the following test procedure:

(a) Apparatus and materials—(1) Humidity chamber. A forced-air humidity chamber capable of maintaining 48.9±1.7 °C (120±3 °F) and 97 ±1.5 percent relative humidity.

(2) Crystallizing dishes. Six glass crystallizing dishes, 90 mm (3.54 in) diameter by 50 mm (1.9 in) height.

(3) Test coupons. (i) Two aluminum coupons. 3003 bare aluminum, zero temper.

(ii) Two copper coupons. ASTM B 152, type ETP, Cabra No. 110 soft copper.

(iii) Two steel coupons. Low carbon, commercial quality, cold rolled, less than 30 carbon content, shim steel.

Each coupon shall be 50.8 by 50.8 mm (2 by 2 in) by 0.076 mm (0.003 in) thick metal free of tears, punctures, or crimps.

(4) Test specimens: Six test specimens of insulation shall be used for one test. Each specimen shall weigh 20g (0.7 oz).

(b) Procedure—(1) General procedures for cleaning all metal coupons. The metal coupons shall be cleaned by the following method:

(i) At no time during the fabrication, cleaning or testing shall the metal coupons be touched by ungloved hands.

(ii) Gloves shall be clean and in good condition.

(iii) All chemicals used shall be of American Chemical Society reagent grade or better, free from oily residues and other contaminants.

(iv) Water shall be distilled or deionized water.

(v) Handle cleaned coupons only with clean forceps.

(vi) In order to avoid exposing laboratory personnel to toxic fumes, the commission recommends that all cleaning procedures be performed in a fume hood.

(vii) Clean the coupons by vapor degreasing with 1,1,1-trichloroethane for ten minutes. Following vapor degreasing, subject the coupons to caustic and/or detergent washing as appropriate. Following caustic or detergent washing, rinse the coupons in flowing water to remove residues. Inspect each coupon for a water-break free surface. (A water-break is a break, separation, beading or retraction of the water film as the coupon is held vertically after wetting. As the coupons are cleaned, the water film should become gradually thinner at the top VerDate Nov<24>2008 15:16 Feb 23, 2010 Jkt 220052 PO 00000 Frm 00307 Fmt 8010 Sfmt 8010 Q:\16\16V2 ofr150 PsN: PC150
These practices are the recommended practices in "ASTM G1—Standard Recommended Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens," published by American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.
(iii) Technique #3—Steel. This technique or technique #1 can be used for post-cleaning the tested steel coupons only.

Description: Use one of the following two solutions:

Solution #1. Add 100 ml of sulfuric acid (specific gravity 1.84), 1.5 ml organic inhibitor, and water to make a 1 liter solution. The solution shall be 50 °C (120 °F). Dip the coupons in this solution.

Solution #2 (also referred to as Clarke’s solution). Add 20 g of antimony trioxide and 50 g of stannous chloride to 1 liter of hydrochloric acid (specific gravity 1.19). The solution shall be stirred and be used at room temperature. Dip the coupons in this solution stirring the solution at a rate such that deformation of the coupons does not occur. This dipping shall last for up to 25 minutes.

(iv) Technique #4—Aluminum. This technique or technique #1 can be used for post-cleaning the tested aluminum coupons only.

Description: Make a 1 liter solution by adding 20g of chromic acid, and 50 ml of phosphoric acid (specific gravity 1.69), to water. The solution shall be 80 °C (176 °F). Dip the coupons in this solution for 5–10 minutes. If a film remains, dip the coupons in nitric acid (specific gravity 1.42) for 1 minute. Repeat the chromic acid dip. Nitric acid alone may be used if there are no deposits.

(7) After cleaning, examine the metal coupons over a 40-W appliance light bulb for perforation.

(c) Noncorrosiveness. Noncorrosiveness shall be determined by the absence of any perforations (excluding notches which extend into the coupon 3 mm or less from any edge) on each of the six test coupons when the coupons are observed over a 40-W appliance light bulb.

§ 1209.6 Test procedures for critical radiant flux.

This section provides the test procedure for determining the critical radiant flux of exposed attic floor insulation using a radiant heat energy source.

(a) Apparatus and description of test procedure. Test chamber (Figures 3 and 4 paragraph (b) of this section). An air-gas fueled radiant heat energy panel or equivalent panel inclined at 30° above and directed at a horizontally-mounted attic floor insulation specimen. The radiant panel generates a radiant energy flux distribution ranging along the approximately 100-cm length of the test specimen from a nominal maximum of 1.0 W/cm² to a minimum of 0.1 W/cm². The test is initiated by open flame ignition from a pilot burner. The distance burned to flame-out is converted to W/cm² from the flux profile graph (Figure 8) and reported as critical radiant flux, W/cm². Section 1209.8 provides a procedure for calibrating the radiation pyrometer used to standardize the thermal output of the panel.

(b) Construction and instrumentation of the radiant panel test chamber. The radiant panel test chamber shall be constructed and instrumented as follows:

(1) The radiant panel test chamber employed for this test shall be located in a draft protected area maintained at 21±3 °C (69.8±9 °F) and relative humidity of 50±20%. The radiant panel test chamber, (Figures 3 and 4) shall consist of an enclosure 140 cm (55 in) long by 50 cm (19½ in) deep by 71 cm (28 in) above the test specimen. The sides, ends, and top shall be of 1.3 cm nominal (½ in) calcium silicate board, such as Marinite I, 0.74 g/cm³ (46 lb/ft³) nominal density, with a thermal conductivity at 177 °C (350 °F) of 1.11 cal (g)/hr cm² °C/cm (0.89 Btu/(hr) (f2) °F/in)). One side shall be provided with an approximately 10 cm × 110 cm (4 × 44 inches) draft tight fire resistant glass window so that the entire length of the test specimen may be observed from outside the fire test chamber. On the same side and below the observation window is a door which, when open, allows the specimen platform to be moved out for mounting or removal of test specimens. A draft tight, fire resistant observation window may be installed at the low flux end of the chamber.

(2) The bottom of the test chamber shall consist of a sliding steel platform which has provisions for rigidly securing the test specimen holder in a fixed and level position. The free, or air access, area around the platform shall be