

FIRE RESISTANCE

1. SCOPE

This method is intended for use in determining the fire resistance of resilient nontextile floor coverings such as fire-retardant rubber matting, fire-retardant vinyl asbestos tile, and fire-retardant linoleum.

2. SPECIMEN

2.1 Tiles. The specimen shall consist of a sufficient number of tiles to provide an area of floor covering about 31½ inches in length and 7 inches in width.

2.2 Rolls. The specimen shall consist of a portion of the test unit about 31½ inches in length and 7 inches in width.

2.3 The thickness of the specimen shall be the thickness of the material undergoing test.

3. APPARATUS

The apparatus shall be as follows :

3.1 A fire resistance testing apparatus as shown in figure 6411A. The apparatus consists essentially of a hood, gas burners, and specimen holder assembled on a suitable framework.

3.1.1 Hood. The hood consists of a horizontal flue 30 inches in length communicating with a vertical flue 18 inches in length. The flues are 8 inches in width by 6 inches in depth. The bottom plate of the horizontal flue is made of sheet steel and the remainder of the hood is constructed of asbestos board. The front end of the bottom plate is cut back about 3 inches so as to provide clearance for the flames of the gas burner.

3.1.2 Specimen holder. The horizontal flue is equipped with a specimen holder consisting of a plate of 1/8-inch thick mild steel, 31½ inches in length and 7 inches in width, supported by means of flanges placed 2 inches above the bottom plate. The specimen holder is located so that there is a space of 3 inches between the end and the back of the vertical flue to permit hot

gases passing under the specimen to be vented through the vertical flue.

3.1.3 Burners. Four open blast gas burners are, located side by side at the front end of the horizontal flue, parallel to the front end of the specimen holder, and on 1¾-inch centers equidistant from each side of the flue. The center of the burners shall be located 4 inches below the bottom surface of the specimen holder and shall be ½ inch in front of the end of the specimen holder. Gas and air are supplied to the burners through a common manifold. Details of the specimen holder are shown in figure 6411B and of the gas burners in figure 6411C.

3.2 Commercial propane gas having a heating value of 2,550 British thermal units per cubic foot at a temperature of 15.6° C. (60° F.) and atmospheric pressure of 30 inches of mercury. The gas system shall be equipped with controls for maintaining the flow at 9.6 cubic feet per hour.

3.3 A source of compressed air and equipment for controlling the rate of flow at 150 cubic feet per hour.

3.4 Equipment such as a fan, or other device, and water column for controlling the draft through the flues at the required rate corresponding to 0.06 inch of water pressure.

3.5 Cement, fire-retardant, as specified in the detail specification.

3.6 A stopwatch or other timing device that will indicate the time in seconds.

3.7 Scale or tape graduated to 0.1 inch.

4. PROCEDURE

4.1 Unless otherwise specified in the detail specification, the time of application of the flame shall be 240 ± 5 seconds.

4.2 The specimen shall be cemented to the specimen holder in the usual manner by means of the fire-retardant cement, 3.5, and allowed to dry for at least 96 hours at room temperature.

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4.3 At the end of the drying period, the specimen holder with specimen attached shall be mounted on the flanges located 2 inches above the bottom of the horizontal flue. The draft through the flues shall be adjusted to an airflow corresponding to 0.06 ± 0.01 inch of water pressure. The flames of the burners shall be adjusted by regulation of the gas and air flow to 9.6 cubic feet per hour and 150 cubic feet per hour, respectively. The flames shall be applied to the specimen for the required time, 4.1, and immediately removed.

4.4 Unless otherwise specified in the detail specification, after removal of the flame, the following shall be recorded.

4.4.1 *Combustion plus ignition time.* The time from the initial application of the flame until the flaming of the specimen ceases shall be recorded.

4.4.2 *Length of char.* The average length of the part of the specimen permanently damaged by burning or charring shall be recorded to the nearest 0.1 inch.

4.4.3 *Length of flame.* The maximum length of the flame shall be recorded to the nearest inch.

4.4.4 *Density of smoke.* The density of the smoke shall be recorded as "light," "medium," or "heavy."

5. RESULTS

5.1 Unless otherwise specified in the detail specification, one specimen from each test unit shall be tested.

5.2 Test unit.

5.2.1 *Combustion plus ignition time.* When one specimen is tested from the test unit, the

combustion plus ignition time of the test unit shall be the value obtained from the specimen tested. When more than one specimen is tested from the test unit, the combustion plus ignition time of the test unit shall be the average of the values obtained from the specimens tested.

5.2.2 *Length of char.* When one specimen is tested from the test unit, the length of char of the test unit shall be the value obtained from the specimen tested. When more than one specimen is tested from the test unit, the length of char of the test unit shall be the average of the values obtained from the specimens tested.

5.2.3 *Length of flame.* When one specimen is tested from the test unit, the maximum length of flame of the test unit shall be the value obtained from the specimen tested. When more than one specimen is tested from the test unit, the maximum length of flame of the test unit shall be the average of the values obtained from the specimens tested.

5.2.4 *Density of smoke.* When one specimen is tested from the test unit, the density of the smoke of the test unit shall be the value obtained from the specimen tested. When more than one specimen is tested from the test unit, the density of the smoke of the test unit shall be the value assigned to the specimen from which the smoke is densest.

5.2.5 The combustion plus ignition time of the test unit shall be recorded to the nearest 5 seconds. The length of char of the test unit shall be recorded to the nearest 0.1 inch. The density of smoke from the test unit shall be recorded as "light," "medium," or "heavy."