



# Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members<sup>1</sup>

This standard is issued under the fixed designation E 761; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers a procedure for measuring the compressive strength of sprayed fire-resistive material (SFRM) applied to a rigid substrate. These fire-resistive materials include sprayed fibrous and cementitious materials applied directly in contact with these structural members. The test method is applicable to laboratory procedure.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

- D 2092 Practice for Preparation of Zinc-Coated (Galvanized) Steel Surfaces for Painting<sup>2</sup>
- E 84 Test Method for Surface Burning Characteristics of Building Materials<sup>3</sup>
- E 119 Test Methods for Fire Tests of Building Construction and Materials<sup>3</sup>
- E 605 Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members<sup>3</sup>

## 3. Summary of Test Method

3.1 The compressive strength of SFRM applied to a steel sheet is determined by applying a crushing load normal to the surface of the specimen. This test method measures the stress at 10 % deformation or at failure, whichever is smaller.

## 4. Significance and Use

4.1 The intent of this test method is to determine properties of direct-applied SFRM that may be used to provide an

indication of serviceability. Satisfactory performance of fire-resistive material applied to structural members and assemblies depends upon its ability while in place to withstand the various influences that may occur during the life of the structure, as well as upon its satisfactory performance under fire tests.

4.2 This test method measures the compressive strength of SFRM and is a measure of the resistance to deformation under a compressive load. It is an indication of the ability of SFRM to remain in place and resist removal during anticipated service conditions.

## 5. Apparatus

5.1 *Testing Machine*— Any form of standard hydraulic or mechanical compression testing machine accurate to 0.005 kg (0.01 lb) and 0.25 mm (0.001 in.).

5.2 *Spherical Bearing Block Assembly*, having a plane bearing surface of 150 mm (6 in.) square. The upper bearing shall be a spherically seated, hardened metal block firmly attached at the center of the upper head of the machine. The center of the sphere shall lie at the center of the surface held in its spherical seat, but shall be free to turn in any direction, and its perimeter shall have at least 6-mm ( $\frac{1}{4}$ -in.) clearance from the head to allow for specimens whose bearing surfaces are not exactly parallel (see Fig. 1).

5.3 *Drying Oven*, capable of maintaining temperature and humidity conditions during the specimen curing cycle, in accordance with the SFRM manufacturers' published requirements.

## 6. Materials and Manufacture

6.1 This test method requires the application of SFRM in accordance with manufacturers' published instructions. The apparatus, materials, and procedures used to apply the SFRM for this test shall be representative of application in the field.

6.2 The density of the prepared sample shall be similar to the density tested and reported during the Test Methods E 119 and Test Method E 84 fire exposure tests or as required by the sponsor of the test.

6.3 Determine the density and thickness of each of the laboratory-prepared specimens. Report in accordance with Test Methods E 605.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.21 on Serviceability.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 06.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.07.