	Title: YALE OFFICE OF FACILITIES PROCEDURE MANUAL Chapter: 01 - Yale Design Standard Division: 07 00 00 Thermal and Moisture Protection	Section: <b>07 81 00</b> Requirements for Applied Fireproofing
		Date: December 2023
		Author: Office of Facilities

## **PART 1 - INTRODUCTION**

### **1.1 PURPOSE**

This section contains general design criteria for spray-applied fireproofing. The following requirements apply to spray fireproofing used in the protection of structural steel members as required by applicable local building codes.

## **PART 2 - GENERAL DESIGN REQUIREMENTS..**

### **2.1 SUBMITTALS**

Provide a schedule in the specification section or on the drawings that identifies the structural components requiring fireproofing, the required hourly rating, and the appropriate UL design.

### **2.2 SYSTEM DESIGN AND PERFORMANCE REQUIREMENTS**


Sprayed fireproofing must conform to the following general requirements and design criteria.

#### **A. General Requirements**

1. Cementitious spray fireproofing must be factory mixed, blended for uniform texture, and composed of non-fibrous materials.
2. Fireproofing materials must demonstrate the following surface burning characteristics when tested in accordance with ASTM E84:
  - Flame spread: 0
  - Smoke developed: 0
3. Sprayed-on, mineral fiber fireproofing is not acceptable.

#### **B. Density Criteria**

1. At locations where sprayed fireproofing is concealed by permanent construction, provide a minimum average density of 15 lb/cu ft (175 kg/cu m), or as listed in the UL Resistance Directory for each rating indicated, whichever is greater.
2. At interior locations where sprayed fireproofing is exposed to the air, but out of reach of building occupants (above 10 ft (3 m) from the floor), provide a minimum average density of 15 lb/cu ft (224 kg/cu m), or as listed in the UL Resistance Directory for each rating indicated, whichever is greater.
3. At exterior locations where sprayed fireproofing is exposed to the air but out of reach of building occupants (above 10 ft (3 m) from the ground), provide a minimum density of 21 lb/cu ft (340 kg/cu m) and a moisture resistance not affected by precipitation or freeze-thaw.

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4. At exposed exterior and interior locations within reach of building occupants (below 10 ft (3 m)), provide a minimum density of 39 lb/cu ft (625 kg/cu m) and a moisture resistance not affected by precipitation or freeze-thaw.

C. Specific Design Criteria

1. The minimum average bond strength must be 200 psf. The minimum individual bond strength must be 150 psf when measured in accordance with ASTM E736 test standards.
2. In accordance with ASTM E760 test standards, cracking, flaking, or delamination must not occur from impact.
3. In accordance with ASTM E605 test standards, the minimum average dry density must be equal to that listed in the UL Fire Resistance Directory.
4. In accordance with ASTM E761 test standards, fireproofing material must deform a maximum of 10% when subjected to forces of 1000 psf.
5. In accordance with ASTM E937 test standards, fireproofing material must not corrode surfaces to which it is applied.
6. The maximum allowable weight loss of fireproofing material due to air erosion must be less than 0.005 gm/ft<sup>2</sup> when measured in accordance with ASTM E859 test standards.
7. No more than 15 cm<sup>3</sup> can be abraded or removed from the fireproofing material when tested in accordance with test methods developed by the City of San Francisco, Bureau of Building Inspection.

2.3 MANUFACTURERS

Subject to compliance with the design requirements, provide products by one of the following manufacturers:


- A. W.R. Grace and Company
- B. Isolatek International Corporation

2.4 ACCESSORIES

Provide metal lath as necessary for specific project conditions.

2.5 INSTALLATION GUIDELINES

- A. Mix and apply fireproofing in strict accordance with the fireproofing manufacturer's instructions.
- B. Apply fireproofing in sufficient thickness to achieve the required rating.
- C. Patch damaged areas as necessary

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2.6 QUALITY CONTROL

Structural testing and inspection must be performed by qualified parties. Testing may be performed to verify fireproofing thickness and density in accordance with ASTM E605 teststandards.

2.7 CLEANING

Remove excess material, overspray, droppings, and debris. Remove fireproofing from surfaces not specifically required to be fireproofed.

2.8 WARRANTY

Provide a two-year warranty stating that applied fireproofing will remain free from cracks, checking, dusting, flaking, spalling, separation, and blistering. Reinstall or repair fireproofing in such instances of failure in performance.

Date	Description of Change	Pages / Sections Modified	ID
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