

SECTION 07 81 00  
APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Spray-on cementitious fireproofing for interior structural steel.
  2. Spray-on cementitious fireproofing for exterior exposed structural steel.
  3. Spray-on cementitious fireproofing for exposed metal deck.

1.2 SYSTEM DESCRIPTION

- A. Applied (Sprayed-On) Fireproofing Systems: Provide UL fire rated assemblies to hourly ratings as follows:
1. Interior Columns: 3 hours.
  2. Exterior Columns: 3 hours.
  3. Interior Beams: 3 hours.
  4. Interior Floors: 3 hours.
  5. Interior Roof Deck: 3 hours.
- B. Air Erosion: Maximum 0.005 gram/sq. ft (0.05 gram/sq. m) allowable weight loss of fireproofing when tested in accordance with ASTM E859.
- C. Corrosion: No contribution to corrosion of steel test panels when tested in accordance with ASTM E937.
- D. Dry Density: The field density shall be measured in accordance with ASTM Standard E605. Minimum average density shall be that required by the manufacturer, or as listed in the UL Fire Resistance Directory for each rating indicated, or as required by the authority having jurisdiction, or a minimum average 640 kg/m<sup>3</sup> (40pcf) whichever is greater.
- E. Mold Resistance: Material to show resistance to fungi growth when tested in accordance with ASTM C665 requirements for fungi resistance of insulation or ASTM G21.
- F. Deflection: Material shall not crack or delaminate from the surface to which it is applied when tested in accordance with ASTM E759.
- G. Bond Impact: Material subject to impact tests in accordance with ASTM E760 shall not crack or delaminate from the surface to which it is applied.
- H. Bond Strength: Fireproofing, when tested in accordance with ASTM E736, shall have a minimum average bond strength of 478 kN/m<sup>2</sup> (10,000 psf) and a minimum individual bond strength of 383 kN/m<sup>2</sup> (8,000 psf).
- I. Compressive Strength: The fireproofing shall not deform more than 10% when subjected to compressive forces of when tested in accordance with ASTM E761.
- J. Fire Resistance Classification: The spray applied fireproofing material shall have been tested and reported by Underwriters Laboratories Inc. in accordance with the procedures

of ANSI/ASTM E119 and shall be listed in the Underwriters Laboratories Fire Resistance Directory.

### 1.3 SUBMITTALS

- A. Product Data: Submit data indicating product characteristics, performance criteria, and limitations of use.
- B. Manufacturer's Installation Instructions: Submit information including special procedures, and conditions requiring special attention.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements
- D. Manufacturer's Field Reports: Indicate compliance with manufacturer's installation instructions and Contract Documents.

### 1.4 QUALITY ASSURANCE

- A. Fireproofing Assembly: Rating as indicated on Drawings.
  - 1. Tested Rating: Determined in accordance with ASTM E119.
- B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Maintain one copy of each document on site.

### 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain minimum ambient and substrate temperature of 40 degrees F (4 degrees C) during and for minimum 24 hours after application of fireproofing, unless otherwise recommended by manufacturer.
- B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
- C. Provide temporary enclosure to prevent spray from contaminating air.

### 1.6 WARRANTY

- A. Furnish five year manufacturer warranty for applied fireproofing.

## PART 2 - PRODUCTS

### 2.1 SPRAY-ON CEMENTITIOUS FIREPROOFING

- A. Manufacturers:
  - 1. Grace Construction Products Monokote Z-146.
  - 2. Isolatek International
  - 3. Pyroc
  - 4. Substitutions: Permitted subject to compliance with requirements.

- B. Product Description:
  - 1. High Density Cementitious Type: Factory mixed, portland cement blended for uniform texture with mineral aggregates and additives, without chlorides, approved for exterior use and conforming to the following requirements:
    - a. Compressive Strength: ASTM E761, minimum 500 psi.
    - b. Dry Density: ASTM E605, minimum density of 40 pcf.
    - c. Bond Strength: ASTM E736, 10,000 psf when set and dry.
    - d. Bond Impact: ASTM E760, no cracking, flaking or delamination.
    - e. Durometer Hardness: ASTM D2240, not less than 40.
    - f. VOC: Less than 1PPM/W.
    - g. Leachable Ammonia: Less than 50 PPB.

## 2.2 ACCESSORIES

- A. Primer, Bonding Agent: Of type recommended by fireproofing manufacturer.
- B. Overcoat, Sealer: As recommended by manufacturer of fireproofing material.
- C. Metal Lath: Expanded metal lath; 3.4 lb/sq ft (16 kg/sq m), galvanized finish; conform with ASTM C847.
- D. Water: Clean, potable.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify surfaces are ready to receive fireproofing.
- B. Verify clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
- C. Verify ducts, piping, equipment, or other items interfering with application of fireproofing have not been installed.
- D. Verify voids and cracks in substrate have been filled. Verify projections have been removed where fireproofing will be exposed to view as finish material.
- E. Verify roof traffic has ceased and roof mounted equipment is in place.

### 3.2 PREPARATION

- A. Perform tests as recommended by fireproofing manufacturer in situations where adhesion of fireproofing to substrate is in question.
- B. Remove incompatible materials affecting bond by scraping, brushing, scrubbing, or sandblasting.
- C. Prepare substrates to receive fireproofing.
- D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.

- E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
- F. Close off and seal duct work in areas where fireproofing is being applied.

### 3.3 APPLICATION - SPRAY-ON CEMENTITIOUS FIREPROOFING

- A. Install metal lath over structural members as indicated on Drawings or as required by fire rated assembly Design Numbers.
- B. Apply primer coating, fireproofing and overcoat sealer as recommended by manufacturer.
- C. Apply fireproofing in sufficient thickness to achieve required fire ratings, with as many passes as necessary to cover with monolithic blanket of uniform density and texture. Apply in layers as recommended by manufacturer, but no more than 3/4" thickness in one pass.
- D. In exposed locations, trowel surface smooth and form square edges, using tools and procedures recommended by fireproofing manufacturer.
- E. Apply overcoat, sealer at rate and in applications recommended by fireproofing manufacturer.
- F. Remove excess material, overspray, droppings, and debris.
- G. Remove fireproofing from materials and surfaces not required to be fireproofed.
- H. At exposed fireproofing, clean surfaces soiled or stained, using manufacturer's recommended procedures.
- I. Patch damaged work as recommended by manufacturer.

### 3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements, 01 70 00 - Execution and Closeout Requirements. Field inspecting, testing, adjusting, and balancing.
- B. Independent Testing Agency To:
  - 1. Inspect fireproofing substrates prior to application of fireproofing for surface temperature and surface preparation in accordance with manufacturer's instructions.
  - 2. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.
  - 3. Test frequency and type in accordance with applicable code and authorities having jurisdiction.
  - 4. Inspect for the following:
    - a. Installed Thicknesses and Density: ASTM E605.
    - b. Bond Strengths: ASTM E736.
  - 5. Re-inspect installed fireproofing for integrity of fire protection, after installation of subsequent Work.

...END OF SECTION 07 81 00