

SECTION 07 81 23  
INTUMESCENT FIRE PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Mastic and intumescent fire resistive coatings (MIFRC).

1.2 ACTION SUBMITTALS

- A. Product Data: Technical data including UL classification and assemblies, product properties including compressive strength, bond strength, hardness, flame spread, and smoke developed; recommended primers, and related accessories.
- B. Shop Drawings: Submit framing plans or schedules, or both, indicating the following:
  - 1. Extent of fire protection for each construction and fire resistance rating.
  - 2. Applicable fire resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
  - 3. Minimum mastic and intumescent fire resistive coating thickness needed to achieve required fire resistance rating of each structural component and assembly.
  - 4. Treatment of mastic and intumescent fire resistive coating after application.
- C. Samples: Submit sample for each exposed product and for each color and texture specified, in 4 inches (102 mm) square in size.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Submit data for Installer and testing agency.
- B. Product Certificates: Submit certificates for each type of resistive fireproofing.
- C. Evaluation Reports: ICC-ES report for resistive fireproofing.
- D. Field quality control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Entity having minimum 5 years documented experience who is certified, licensed, or qualified by mastic and intumescent fire resistive coating manufacturer as experienced and with trained staff to install manufacturer's products according to specified requirements.
- B. Source Limitations: Obtain fire protection for each fire resistance design from single source.

- C. Mockups: Build mockups to demonstrate aesthetic effects and to establish quality standards for materials and execution.
  - 1. Build mockup of each type of fire protection and different substrate and each required finish as shown on Drawings.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves deviations in writing.
  - 3. Subject to compliance with requirements, approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at site.
  - 1. Review products, design ratings, restrained and unrestrained conditions, thickness, and performance requirements.

## 1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fire protection when ambient or substrate temperature is 50 degrees F (10 degrees C) or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fire protection, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if inadequate, forced air circulation until fire protection dries thoroughly.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire resistance design and manufacturer's written instructions.
- B. Fire Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Steel members are considered unrestrained unless specifically noted otherwise.
- C. Asbestos: Provide products containing no detectable asbestos.

### 2.2 MASTIC AND INTUMESCENT FIRE RESISTIVE COATINGS

- A. Mastic and Intumescent Fire Resistive Coating: factory mixed, multicomponent system consisting of intumescent base coat and topcoat, and complying with indicated fire resistance design.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Albi Manufacturing; a division of StanChem, Inc.

- b. Carboline Company; a subsidiary of RPM International.
  - c. Hilti, Inc.
  - d. International Protective Coatings.
  - e. Isolatek International.
  - f. Sherwin-Williams Company (The).
2. Application: Designated for exterior use by a qualified testing agency acceptable to authorities having jurisdiction.
  3. Thickness: Required for fire resistance design indicated, measured according to requirements of fire resistance design.
  4. Surface Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Flame Spread Index: 25 or less.
    - b. Smoke Developed Index: 50 or less.
  5. Hardness: ASTM D 2240, Type D Durometer; not less than 65, Type D durometer, according to ASTM D 2240.
  6. Bond Strength: ASTM D 4541.
  7. Compressive Strength: ASTM D 695
  8. Finish: Selected by Architect.
    - a. Color and Gloss: Selected by Architect.
- B. Auxiliary Materials: Provide auxiliary materials compatible with fire protection and substrates and approved by UL for use in fire resistance designs indicated.
1. Substrate Primers: Primers approved by fire resistive coating manufacturer and complying with required fire resistance design by UL.
  2. Reinforcing Fabric: Glass or carbon fiber fabric of type, weight, and form required to comply with fire resistance designs indicated; approved and provided by fire resistive coating manufacturer.
  3. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire resistance design indicated; approved and provided by fire resistive coating manufacturer. Include pins and attachment.
  4. Topcoat: Suitable for application over applied fireproofing; of type recommended in writing by fire resistive coating manufacturer for each fire resistance design.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for substrates and conditions affecting performance of the work and according to each fire resistance design.
1. Verify substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.

2. Verify objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
  3. Verify substrates receiving fire protection are not obstructed by ducts, piping, equipment, or suspended construction that interferes with fire protection application.
- B. Conduct tests according to fire resistive coating manufacturer's written instructions to verify substrates are free of substances capable of interfering with bond.
  - C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the work.
  - D. Proceed with installation after correcting unsatisfactory conditions.

### 3.2 PREPARATION

- A. Cover adjacent work subject to damage from fallout or overspray of fire protection materials during application.
- B. Clean substrates of substances that impair bond of fireproofing. Prepare surfaces in accordance with manufacturer's written instructions for each substrate condition. Provide barrier coats over incompatible primers or remove and reprime. If removal is impractical or impossible because of size or weight of item, provide surface applied protection before surface preparation and painting
  1. Ferrous Metals: Clean ungalvanized ferrous metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
    - a. SSPC-SP 6/NACE No. 3: Blast steel surfaces clean as recommended by paint system manufacturer.
  2. Shop Primed Ferrous Metal Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop primed surfaces.
    - a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
  3. Galvanized Ferrous Metal Substrates: Clean galvanized surfaces with nonpetroleum based solvents leaving surface free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied intumescent fireproofing.
  4. Barrier Coat: Provide compatible barrier coats recommended by fire resistive coating manufacturer over incompatible primers or remove and reprime with compatible primer.
- C. Prime substrates where included in fire resistance design and where recommended in writing by fire resistive coating manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that telegraph through fire resistive products after application.

### 3.3 APPLICATION

- A. Construct fire protection assemblies identical to fire resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, topcoats, finishing, and other materials and procedures affecting fire protection work.
- B. Comply with fire resistive coating manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to conditions of installation and as required to achieve fire resistance ratings indicated.
- C. Coordinate application of fire protection with other construction to minimize need to cut or remove fireproofing.
  - 1. Do not begin applying fire protection until clips, hangers, supports, sleeves, and items penetrating fire protection are in place.
  - 2. Defer installing ducts, piping, and other items that interfere with applying fire protection until application of fire protection is completed.
- D. Install auxiliary materials as required, as detailed, and according to fire resistance design and fire resistive coating manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fire resistive coating manufacturer.
- E. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or placement method recommended in writing by fire resistive coating manufacturer.
- F. Extend fire protection in full thickness over entire area of each substrate to be protected.
- G. Install body of fire protection in a single course unless otherwise recommended in writing by fire resistive coating manufacturer.
- H. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.
- I. Cure fire protection according to fire resistive coating manufacturer's written instructions.
- J. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.
- K. Finishes: Where indicated, apply fire protection to produce the following finishes:
  - 1. Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
  - 2. Spray Textured Finish: Finish left as spray applied with no further treatment.

3. Rolled, Spray Textured Finish: Even finish produced by rolling spray applied finish with a damp paint roller to remove drippings and excessive roughness.

#### 3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  1. Test and inspect as required by the IBC Subsection 17 05 .15 Mastic and Intumescent Fire Resistant Coatings.
- B. Perform the tests and inspections of completed work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire resistance design.
- C. fire protection will be considered defective if it does not pass tests and inspections.
  1. Remove and replace fire protection that does not pass tests and inspections, and retest.
  2. Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

#### 3.5 CLEANING, PROTECTING, AND REPAIRING

- A. Cleaning: Immediately after completing operations in each containable area, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.
- C. As installation of adjacent construction proceeds, inspect fire protection and repair damaged areas due to work of other trades.
- D. Repair fire protection damaged by other work before concealing it with other construction.
- E. Repair fire protection by reapplication using same method as original installation or using manufacturer's recommended trowel applied product.

**END OF SECTION**