



SECTION 07 81 00  
APPLIED FIREPROOFING

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fireproofing systems including the following:
  - 1. Fire proofing for structural steel

1.2 RELATED SECTIONS

- A. Section 07 81 13 – Cement Aggregate Fireproofing.
- B. Section 07 81 16 – Cementitious Fireproofing.

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
  - 1. ANSI/UL 263 - Fire Tests of Building Construction and Materials.
  - 2. ANSI/UL 723 - Surface Burning Characteristics of Building Materials.
- B. American Petroleum Institute (API)
  - 1. API 2218 Fireproofing Practices in Petroleum and Petrochemical Processing Plants
- C. ASTM International (ASTM):
  - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
  - 3. ASTM E 1529 - Standard Test Methods for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
  - 4. ASTM E 1725 - Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components
  - 5. ASTM E 814 - Standard Test Method for Fire Tests of Penetration Firestop Systems
- D. British Standard (BS)
  - 1. BS EN 1356-4 - Fire resistance tests for loadbearing Columns
  - 2. BS EN 1363-1 - Fire resistance tests General requirements
  - 3. BS EN 1363-2 - Fire resistance tests Alternative and additional procedures
- E. International Code Congress (ICC):
  - 1. International Building Code (IBC).
  - 2. International Residential Code (IRC).
- F. International Organization for Standardization (ISO)
  - 1. ISO 13702 - Petroleum and natural gas industries -- Control and mitigation of fires and

- 2. explosions on offshore production installations -- Requirements and guidelines  
ISO 22899 - Determination of the resistance to jet fires of passive fire protection materials
- G. National Fire Protection Association (NFPA):
  - 1. NFPA 70 - National Electrical Code.
  - 2. NFPA 101 - Life Safety Code.
  - 3. NFPA 290 - Standard for Fire Testing of Passive Protection Materials for Use on LP-Gas Containers
  - 4. NFPA 58 Appendix H - NFPA 58: Liquefied Petroleum Gas Code. Appendix H: Procedure for Torch Fire and Hose Stream Testing of Thermal Insulating Systems for LP-Gas Containers
- H. Underwriters Laboratories (UL)
  - 1. UL 1709 - Rapid Rise Fire Tests of Protection Materials for Structural Steel
  - 2. UL 263 - Fire Tests of Building Construction and Materials

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Provide systems that are listed by at least one of the following:
  - 1. Underwriters Laboratories Inc. (UL), in "Fire Resistance Directory".
  - 2. Intertek Testing Service (Formerly known as Omega Point Laboratories), in "Directory of Listed Products."
  - 3. Any other qualified independent testing and inspection agency that conducts periodic follow-up inspections and is acceptable to authorities having jurisdiction.
- B. Provide products that bear classification marking of qualified independent testing agency.
- C. Where fireproofing systems not listed by any listing agency are required due to project conditions, submit a substitution proposal with evidence specified.
- D. Use only products specifically listed for use in listed systems.
- E. Fireproofing materials must meet and be acceptable for use by all building codes and NFPA codes cited in this section.
- F. Provide fireproofing products and systems tested and listed to UL 1709 and ASTM E 1529 for Hydrocarbon Pool Fires specific to the oil, gas, petrochemical industry.
- G. Provide fireproofing products and systems for the oil, gas, petrochemical industry that are recommended by API 2218 Fireproofing Practices in Petroleum and Petrochemical Processing Plants.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Shop Drawings: For each fireproofing system, provide the following:
  - 1. Listing agency's detailed drawing showing fireproofing materials, identified with listing agency's name and number or designation and fire rating achieved.
  - 2. For proposed systems that do not conform strictly to the listing, submit listing agency's drawing marked to show modifications and approved by fireproof manufacturer.
- C. Product Certificates: Submit certificates of conformance signed by fireproof system manufacturer certifying that materials furnished comply with requirements.
- D. Product Data: Furnish manufacturer's product data sheets on each material to be used in fireproof systems. Information on manufacturer's product data sheet should include:

1. Product characteristics including compliance with appropriate ASTM/UL/ANSI/ISO/NFPA/BS test standards.
  2. Storage and handling requirements and recommendations.
- E. Installation Instruction: Furnish manufacturer's installation instructions.
- 1.6 QUALITY ASSURANCE
- A. General: All fireproofing systems shall be installed with approved methods using materials that have been tested and classified to produce an approved assembly.
  - B. Manufacturer Qualifications: All primary products specified in this section will be supplied by a manufacturer with a minimum of twenty five (25) years experience.
  - C. Installer Qualifications: Firm must be qualified by having experience, staff, and be properly trained to install the specified products, and meets one of the following criteria:
    1. Contractor is a 3M Master Contractor.
    2. Contractor is a Certified 3M Trained contractor.
    3. Contractor is acceptable to manufacturer.
    4. Contractor is acceptable to authority having jurisdiction.
    5. Contractor has completed the manufacturer's certified product installation training.
    6. Contractor must provide a list of completed projects as evidence of experience; include project name and address, owner's name and address, and architect's name and phone number.
    7. Certificate: Contractor should provide certificate of qualification.
  - D. Codes: Where manufacturer's application procedures are in conflict with those of the code authority having jurisdiction, the more strict guidelines will prevail.
  - E. Pre-installation Meetings: Meetings to agree on fireproof requirements, conditions, manufacturer's instructions.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver and store products until ready for installation in manufacturer's original unopened packaging, legibly marked with manufacturer's name and product identification, date of manufacture, lot number, shelf life, listing agency's classification marking, curing time, and mixing instructions if applicable.
  - B. Store and handle in such a manner as to prevent deterioration or damage due to moisture, temperature changes, contaminants, and other causes; follow manufacturer's instructions.
  - C. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.
- 1.8 PROJECT CONDITIONS
- A. Coordinate construction so that each particular fireproof system may be installed in accordance with its listing, including sizing, sleeves, and penetrating items.
  - B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install fireproofing under environmental conditions outside manufacturer's absolute limits.
- 1.9 WARRANTY
- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms,

conditions, and exclusions from coverage.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: 3M Fire Protection Products, which is located at: 3M Center Bldg. 220-5N-06; St. Paul, MN 55144-1000; Toll Free Tel: 800-328-1687; Fax: 651-737-0636; Email:firetech1@mmm.com Web:[www.3m.com/firestop](http://www.3m.com/firestop)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. Single Source: To maintain control and integrity of the firestop applications a single manufacturer should be used. Specific UL or approved listing agencies systems applicable to each type of firestop condition should be supplied by one manufacturer.

### 2.2 SCOPE/APPLICATION

- A. Provide installed fireproof products that protect the structural steel for the desired fire rating.

### 2.3 APPLIED FIREPROOFING FOR STRUCTURAL STEEL

- A. 3M™ Endothermic Mat E-5A-4: Endothermic heat absorbing mat.
  - 1. Type: Mat.
  - 2. Fire Resistance: For use in up to 4 hour fire rated systems.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that openings and adjacent areas are not obstructed by construction that would interfere with installation of fireproofing, including ducts, piping, equipment, and other suspended construction.
- C. Verify that environmental conditions are safe and suitable for installation of fireproofing.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Prepare substrates in accordance with manufacturer's instructions and recommendations.

### 3.3 INSTALLATION

- A. Install in strict accordance with manufacturer's detailed installation instructions and procedures.
- B. Notify authority having jurisdiction when fireproofing installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.
- C. Do not cover fireproofing with other construction until approval of authority having jurisdiction has been received.

### 3.4 FIELD QUALITY CONTROL

- A. Owner will engage an independent testing agency to inspect installed fireproofing and to prepare reports indicating whether the installed work complies with the contract documents.
- B. Notify testing agency at least 7 days prior to date when fireproofing installation will be ready for inspection; obtain advance approval of general schedule and phasing, if any, required to allow subsequent construction to proceed.

### 3.5 CLEANING AND PROTECTION

- A. Remove left over material and debris from Work area.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OFSECTION