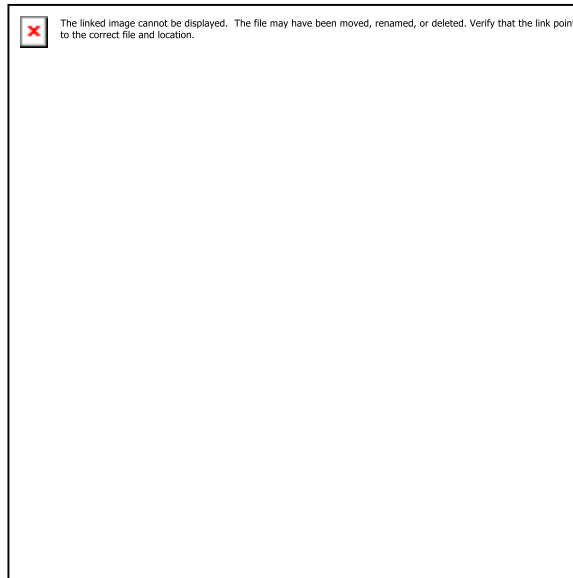




SECTION 09 96 43

FIRE RETARDANT COATING

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation and application of fire-retardant intumescent paint to combustible interior items and surfaces.
 - 1. Latex, water based, single component, self-priming, flame retardant paint. (FfA)
 - 2. Exterior Topcoat: Acrylic resin, protective coating used over surfaces with latex water based fire resistant and fire retardant coatings. (FfE)
 - 3. Intumescent coating system meeting ASTM fire and weatherization standards for wildfire protection. (Firefree Wildfire Exterior System)

1.2 RELATED SECTIONS

- A. Section 09 90 00 - Painting and Coating.
- B. Section 09 96 46 - Intumescent Coatings.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
 - 2. ASTM E2768 - Standard Test Method for Extended Duration Surface Burning

Characteristics of Building Materials (30 min Tunnel Test).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
 - 1. Product Data Paints and Coatings: For interior paints and coatings, documentation including printed statement of VOC content.
 - 2. Manufacturer's data sheets on each product to be used.
 - 3. Preparation instructions and recommendations.
 - 4. Storage and handling requirements and recommendations.
 - 5. Typical installation methods.
 - 6. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include manufacturer's recommended spreading rate and DFT (dry film thickness) for each separate coat for each type of substrate indicated to achieve intended use.
- C. Verification Samples: Two representative units of each type, size, pattern, and color.
- D. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five years documented experience.
 - 1. The manufacturer does recommend third party special inspections to ensure that the dry film thickness complies with the manufacturer's recommendation.
- B. Applicator Qualifications: A commercial firm or individual experienced in applying materials similar in material, design, and extent to those indicated for this Project, and whose work has resulted in applications with a record of successful in-service performance, and the following additional requirements:
 - 1. Approval: Licensed-experienced Contractor Applicator.
 - 2. Similar Projects: When requested, Applicator shall provide a list of the last five (5) comparable jobs including, name and location, specifying authority / project manager, start / completion dates and value of the painting work.
 - 3. Staffing: The Applicator shall show proof before commencement of work that he will maintain a qualified crew throughout the duration of the work.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
 - 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
 - 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
 - 3. Retain mock-up during construction as a standard for comparison with completed work.
 - 4. Do not alter or remove mock-up until work is completed or removal is authorized.
 - 5. Mock-up may be incorporated into final construction upon Owner's approval.

- E. Field Samples: At owner's expense, the Owner¹ will select a qualified independent testing agency, not affiliated with the applicator, to verify that preparation of substrate and application thickness of the intumescent coating complies with the requirements specified.

1.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
 - 1. Review project requirements, substrate conditions, manufacturer's installation recommendations and warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
 - 2. Pre-installation Testing: Conduct pre-installation testing as follows:
 - a. _____.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
 - 1. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 50 degrees F (10 degrees C).
 - a. Maintain containers in clean condition, free of foreign materials and residue.
 - b. Remove rags and waste from storage areas daily.
 - c. Store fire retardant coatings in a separate location from fire resistant coatings, and label areas to reflect designation.
- B. Protect from damage due to weather, excessive temperature, and construction operations.
- C. Do not apply any materials that have been frozen or have come into contact with contaminants prior to use. Immediately remove any such materials from the jobsite.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
 - 1. Apply waterborne intumescent paints only when temperatures of surfaces to be painted and ambient air temperatures are between 50 and 85 degrees F (10 and 29 degrees C).
 - 2. Apply solvent-thinned intumescent paints only when temperatures of surfaces to be painted and ambient air temperatures are between 45 and 95 degrees F (7 and 35 degrees C).
 - 3. Do not apply intumescent paints in snow, rain, fog, or mist; when relative humidity exceeds 75 percent; at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
 - 4. Allow wet surfaces to dry thoroughly and to attain temperature and conditions specified before starting or continuing coating operation.
 - 5. Moisture Content: Moisture content in wood substrates shall not exceed 12 percent levels.

1.9 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
 - 1. Warranty Period: 10 year limited warranty commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Firefree Coatings, Inc., which is located at: 8 Commercial Blvd. Suite E; Novato, CA 94949; Toll Free Tel: 888-990-3388; Tel: 415-459-6488; Email: [request info \(info@firefree.com\)](mailto:info@firefree.com); Web: <https://www.firefree.com>
- B. Substitutions: Not permitted.

2.2 INTUMESCENT PAINT MATERIALS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each material or coat, provide products and spreading rates recommended in writing by intumescent paint manufacturer for use on substrate indicated. Comply with requirements for fire-retardant coating classification and surface-burning characteristics indicated.
- B. Paint Colorants: To have zero (0) VOCs and free of hazardous chemicals.
 - 1. Products shall comply with Section 01 81 13 - Sustainable Design Requirements.
- C. Colors and Gloss: As indicated on Drawings.
- D. Primer: Intumescent paint manufacturer's recommended primer compatible with substrate and other materials indicated.
 - 1. Application over rough wood, primer is not required.
 - 2. Use appropriate primer for its intended use, then apply intermediate coat for fire protection.

2.3 INTERIOR, FIRE RETARDANT, PIGMENTED, INTUMESCENT PAINT SYSTEM

- A. System Description: Designed to meet ASTM E84 fire retardant requirements, including the extended 30-minute standard for common construction substrates.
 - 1. The Manufacturer will provide a tested substrates list meeting ASTM E84 standards.
 - a. Application: Combustible materials and assemblies.
- B. Primer: Intumescent paint manufacturer's recommended primer compatible with substrate and other materials indicated. Use appropriate primer for its intended use, then apply intermediate coat for fire protection.
 - 1. Number of Coats: One, where required by intumescent coating manufacturer.
- C. Basis of Design: Firefree Wildfire Exterior System as manufactured by Firefree Coatings Inc. An intumescent coating system that meets the ASTM fire and weatherization standards for wildfire protection in the Wildland Urban Interface as prescribed in the California Building Standards Code Section 704A - "Materials and

construction methods for Exterior Wildfire Exposure" and the International Code Council (ICC).

1. The Firefree Exterior System is a two-product system.
 - a. Component No. 1: Firefree Class A. Provides the fire ignition resistant properties.
 - 1) Application: Dry: 20 mils. Wet: 30 mils. Coats: 2
 - 2) Coverage: 53 sq ft per gallon (1.3 sq m per Liter).
 - b. Component No. 2: Firefree Exterior Topcoat: Does not have any fire-retardant properties on its own; it is used only to protect FfA from long-term weather exposure.
 - 1) Application: Dry: 6 mils. Wet: 12 mils. Coats: 2.
 - 2) Coverage: 53 sq ft per gallon (1.3 sq m per Liter).
 2. Certifications and Compliance:
 - a. ASTM WUI test standards: Passes.
 - b. International Code Council (ICC):
 - 1) Listed: Fire ignition resistant.
 - 2) Listed: Weather resistant.
 - c. ICC Evaluation Service (ICC-ES): The system complies with the following.
 - 1) ASTM E2768-11 ignition resistance; ASTM E84 30 Minutes Extended.
 - 2) ASTM D2898-10 weatherization. 2018 International Wildland Urban Interface Code prescribed under Section 503 Ignition Resistant Materials.
 - d. California Building Code (CBC), SFM 12-7A-3 conditions in accordance with ASTM E2957 for fire resistance to wildfire flame penetration of eaves, soffits, and ignition-resistant materials to other assembly projections including but not limited to deck structures and cantilevers.
 3. Does not need to be reapplied yearly.
 4. Recommended uses are in both new, retrofit, and defective construction (residential, commercial, industrial and government), insulation and transportation. The projects using our products include historic properties, schools, health care (hospitals, assisted living), apartments, condominiums, high rises, hotels, stores, restaurants, oil and solar facilities, government facilities, military applications, and facilities, transportation (aero- space, aviation, light rail, maritime, energy). Delete if not required.
- D. Intermediate Coat: Water-based, flat latex or low-gloss latex, fire-retardant intumescent paint and overcoat, fire retardant paint of interior substrates.
1. Basis of Design: Firefree Class A (FfA) paint as manufactured by Firefree Coatings Inc. A latex water based, single component, self-priming, flame retardant paint.
 2. Certifications and Compliance: Tested by Independent ISO/IEC 17025 Accredited Laboratory.
 - a. Qualifies For LEED v4 Credit.
 - b. CDPH/EHLB Standard Method v1.2, 2017 Emissions.
 - c. VOC per ASTM D3960: Low. Less than 36 grams per Liter.
 - 1) Meets VOC regulations for OTC, SCAQMD, and CARB.
 - d. ASTM E84: Application:
 - 1) Meets 10-minute protection in accordance with Surface Burning Characteristics. Interior usage.
 - a) Application: Dry: 6 mils. Wet: 9 mils.
 - 1) Rating: Class A.
 - 2) Flame Spread Index: 20.
 - 3) Smoke developed Index: 90.
 - 4) Substrate: Wood and combustible surfaces.

- 5) Coverage: 178 sq ft per gal.
 - b) Application: Dry: 10 mils. Wet: 15 mils.
 - 1) Rating: Class A.
 - 2) Flame Spread Index: 5.
 - 3) Smoke developed Index: 90.
 - 4) Substrate: Wood and combustible surfaces.
 - 5) Coverage: 106.5 sq ft per gal.
 - 2) Meets the extended 30-minute protection in accordance with ASTM E84 Surface Burning Characteristics; Extended E-84, ASTM E2768 for interior applications. Interior usage.
 - a) Application: Dry: 8 mils. Wet: 12 mils.
 - 1) Rating: Class A, Extended 30 minutes.
 - 2) Flame Spread Index: 0.
 - 3) Smoke developed Index: 45.
 - a) Meets smoke index rating for plenum spaces: Less than or equal to 50.
 - 4) Substrate: Lumber, Timber, Douglas Fir, Red Oak, Plywood, Yellow Pine, Tongue, and Groove.
 - 5) Coverage: 133.5 sq ft per gal.
 - b) Application: Dry: 20 mils. Wet: 30 mils.
 - 1) Rating: Class A, Extended 30 minutes.
 - 2) Flame Spread Index: 0.
 - 3) Smoke developed Index: 0.
 - a) Meets smoke index rating for plenum spaces: Less than or equal to 50.
 - 4) Substrate: LVLs, OSB.
 - 5) Coverage: 53 sq ft per gal.
 - 3) Meets Wildfires (WUI) Protection. Meets ASTM ignition resistance and weatherization standards required for use in the Wildland Urban Interface ("WUI"), as prescribed in the California Building Standards Code Section 704A. Exterior Use.
 - a) Listing Reports: ESL-1205 and ESL-1206 from ICC Evaluations Services.
 - b) Two Product System:
 - 1) FfA: Ignition Resistant.
 - a) Application: Dry: 20 mils. Wet: 30 mils.
 - b) Number of Coats: 2.
 - 2) FfE: Acrylic Topcoat.
 - a) Application: Dry: 6 mils. Wet: 12 mils.
 - b) Number of Coats: 2.
 - e. International Code Council (ICC): LABC and LARC Supplement.
 - 1) ICC ESL 1205.
 - 2) ICC ESL 1206.
 - 3) ICC ESL 1213 CAN/ULC.
 - f. Tested to ASTM D5116: Organic Emissions.
 - g. Can earn LEED credits per Method v1.2, 2017.
 - h. California State Fire Marshall: Approved. BML Listing No 2280-2112 Flame Spread.
3. Properties:
- a. Color: White. Finish: Flat. Anti-Microbial.
 - b. Volume Solids: 67 percent.
4. Application: Brushed, rolled, or sprayed using an airless spray gun.
- a. Similar to water-based latex paint except for recommended thickness which needs to be precisely complied with for adequate performance.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly constructed and prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
- C. Examine substrates and conditions, with Applicator present, for compliance with manufacturer's requirements for surface treatments, shop-primed surfaces, maximum moisture content, and other conditions affecting performance of the Work.
- D. Begin coating only when moisture content of wood substrate is 12 percent or less when measured with an electronic moisture meter.
- E. Begin coating no sooner than 28 days after substrate is constructed and is visually dry on both sides.
- F. Verify suitability of substrates, including surface conditions, and compatibility with existing finishes and primers.
- G. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
- H. Inspection:
 - 1. The independent testing agency will ensure that preparation of substrate is in accordance with manufacturer's recommendations.
 - 2. The testing agency will randomly obtain and test samples during application to verify that wet film thickness of the intumescent coating complies with requirements of this section.
 - 3. Work not in compliance will be rejected and shall immediately be brought into compliance by the applicator.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.
- B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
 - 1. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances, including dirt, oil, grease, and incompatible paints and encapsulants, that could impair bond of coatings. Do not coat surfaces if surface moisture content or alkalinity exceeds that permitted in manufacturer's written instructions.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
 - 2. Perform cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, approved submittals, and in

proper relationship with adjacent construction.

- B. General: Apply intumescent paints according to manufacturer's written instructions and to comply with requirements for fire-retardant coating classification.
 - 1. Use equipment and techniques best suited for substrate and type of material being applied.
 - 2. Coat surfaces behind movable items the same as similar exposed surfaces.
 - 3. Apply each coat separately according to manufacturer's written instructions.
- C. Apply coatings to prepared surfaces as soon as practical after preparation and before subsequent surface soiling or deterioration.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - 1. Pigmented Finishes: If undercoats or other conditions show through pigmented topcoat/overcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
- B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

END OF SECTION