SECTION 07 81 23

INTUMESCENT FIRE PROTECTION

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\*\* NOTE TO SPECIFIER \*\* Firefree Coatings, Inc.; Intumescent Fire Resistant Coatings.  
This section is based on the products of Firefree Coatings, Inc., which is located at:8 Commercial Blvd., Suite ENovato, CA 94949Toll Free Tel: 888-990-3388Tel: 415-459-6488Email: [request info (info@firefree.com)](https://arcat.com/rfi?action=email&company=Firefree%252BCoatings%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(07812ffc)%253A%2520&coid=42024&spec=07812ffc&rep=&fax=)  
Web: <https://www.firefree.com>   
 [ [Click Here](https://arcat.com/company/firefree-coatings-inc-42024) ] for additional information.  
Firefree Coatings, Inc. ("Firefree") is the leading developer of cost-efficient intumescent fire retardant and fire resistant technologies that help prevent the spread of fire, smoke, and toxic gases during a fire, thus giving occupants extra time to evacuate and limiting the destruction of property. Ff88 and FfA are tested at third party accredited, International Accreditation Service (IAS), fire testing laboratories and are listed/inspected by ICC ES, FM Approvals. Firefree's Officers are members of NFPA, ICC-ES and ASTM E-05 Committees.  
Firefree Coatings is deeply committed to human safety and environmental issues and is strongly positioned to meet the increasing market demand for fire safety benefits for commercial, governmental, and residential markets in the construction, insulation and transportation industries.  
Firefree sells and ships products in all five continents for private, corporate, and governmental projects, with customers and projects all over the world from the Americas (US, Canada, Mexico, Costa Rica.) to Europe (Belgium, France, Germany, Spain, United Kingdom.), Asia (Australia, India, Indonesia, Philippines, New Guinea, New Zealand, South Korea.), Africa (Nigeria.) and the Middle East (Saudi Arabia, Oman, Kuwait.).  
The team at Firefree has decades of experience in construction (new, retrofit, commercial, industrial, residential, etc.) and holds extensive experience in Fire Test Standards as well as building codes to assist architects, developers, and building owners to meet today's fire safety codes and environmental requirements. Firefree has also worked with some of the world's prominent fire scientists and IAS / ICC-ES certified fire testing laboratories. Our Founder, John, is an ASTM E05 committee member that helped design and co-write both the new ASTM E2886 ember/fire resistant vents as well the ASTM Eave/Soffit fire test standards that are now defined in the building codes

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Intumescent Coatings:
       1. Latex, water based, single component coating providing fire resistant protection. (Ff88)
       2. Latex, water based, single component, self-priming, flame retardant paint. (FfA)
       3. Exterior Topcoat: Acrylic resin, protective coating used over surfaces with latex water based fire resistant and fire retardant coatings (FfE)
       4. Intumescent coating system meeting ASTM fire and weatherization standards for wildfire protection. (Firefree Wildfire Exterior System)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 09 90 00 - Painting and Coating.
    2. Section 09 96 43 - Fire Retardant Coating.
    3. Section 09 96 46 - Intumescent Coatings.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
       1. ASTM D562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
       2. ASTM D1475 - Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.
       3. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
       4. ASTM D-3675 /ASTM E162 / ASTM E-662 - Standard Test Method for Surface Flammability of Flexible Cellular Materials Using A Radiant Heat Energy Source.
       5. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related.
       6. ASTM D5116 - Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
       7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
       8. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
       9. ASTM E162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
       10. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
       11. ASTM E736 - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.
       12. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
       13. ASTM E-1354 - Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter.
       14. ASTM E2768 - Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test).
       15. ASTM E2957 - Standard Test Method for Resistance to Wildfire Penetration of Eaves, Soffits and Other Projections.
       16. ASTM E3048 - Standard Test Method for Determination of Time to Burn-through using the Scale Calorimeter.
    2. Australian Standards (AS)
       1. AD 1530 - Methods for fire tests on building materials, components, and structures.
       2. AS 1530.3 - Simultaneous determination of ignitability, flame propagation, heat release and smoke release.
       3. AS 1530.4 - Fire-resistance tests for elements of construction.
    3. British Standards (BS):
       1. BS476 - Fire Testing.
          1. Part 6 - Fire Propagation Test.
          2. Part 7 - Surface Spread of Flame Test.
    4. California Air Resources Board (CARB).
    5. FM Global (FM): Approvals.
       1. FM 4975 - Fire-Retardant Paints and Coatings Over Combustible Surfaces.
       2. FM 4470 Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction
    6. European Standards (EN)
       1. EN 13501 - Poland (PN) Fire Classification of Construction Products and Building Elements: B-s2,d0.
    7. International Building Code (IBC):
    8. International Code Council (ICC):
       1. ICC ESR 4271 - Evaluation report.
       2. ICC ESL 1205 and ESL 1206 - Listing report.
       3. ICC ESL 1213 CAN S102 - Listing report.
       4. ICC ESL 1411 - Full Scale ASTM E119.
       5. ICC ESL 1371 - Aluminum Composite Paint Burn-Through.
    9. Master Painters Institute (MPI)
    10. National Fire Protection Association (NFPA):
        1. NFPA 251 - Standard Methods of Tests of Fire Endurance Building Construction and Materials.
        2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
        3. NFPA 276 -
    11. New York Material and Equipment Acceptance Division (MEA).
    12. South Coast Air Quality Management District (SCAQMD).
    13. Underwriters Laboratories (UL):
        1. UL 263 - Standard for Safety for Fire Tests of Building Construction and Materials.
        2. UL 723 - Standard for Safety for Surface Burning Characteristics of Building Materials.
    14. Underwriters' Laboratories of Canada, Ltd. (ULC):
        1. ULC S101 - Fire Endurance Test of Building Construction and Materials.
        2. ULC S102 - Surface Burning Characteristics of Building Materials and Assemblies.
    15. Uniform Building Code (UBC):
        1. UBC 26-2 - Test Method for the Evaluation of Thermal Barriers.
        2. UBC 26-3 - Room Fire Test Standard for Interior of Foam Plastic Systems.
    16. New Zealand (NZ) Building Code C3.4 (a).
        1. NZBC-ISO 9705: Group Number Classification 1-S.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. 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.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
    2. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum 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.
     2. 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.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. 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.

\*\* NOTE TO SPECIFIER \*\* Retain, edit, or delete paragraph below to suit project requirements. Coordinate this paragraph with requirements of Field Quality Control article in Part 3 of this section. Delete options not required.

* + 1. 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. PRE-INSTALLATION CONFERENCE
     1. 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.

\*\* NOTE TO SPECIFIER \*\* Specify substrate testing required. Delete if not required.

* + - 1. Pre-installation Testing: Conduct pre-installation testing as follows:
         1. \_\_\_\_\_\_\_\_\_\_\_\_\_.
  1. DELIVERY, STORAGE, AND HANDLING
     1. 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).
           1. Maintain containers in clean condition, free of foreign materials and residue.
           2. Remove rags and waste from storage areas daily.
           3. Store fire retardant coatings in a separate location from fire resistant coatings, and label areas to reflect designation.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
     3. 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.
  2. PROJECT CONDITIONS
     1. 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 17 percent levels.
  3. WARRANTY
     1. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
     2. 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.

\*\* NOTE TO SPECIFIER \*\* Coordinate paragraph below with manufacturer's warranty requirements.

* + - 1. Warranty Period: 10 year limited warranty commencing on Date of Substantial Completion.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Firefree Coatings, Inc., which is located at:8 Commercial Blvd., Suite ENovato, CA 94949Toll Free Tel: 888-990-3388Tel: 415-459-6488Email: [request info (info@firefree.com)](https://arcat.com/rfi?action=email&company=Firefree%252BCoatings%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(07812ffc)%253A%2520&coid=42024&spec=07812ffc&rep=&fax=);Web: <https://www.firefree.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. INTUMESCENT FIREPROOFING
     1. General:
        1. 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.
        2. Paint Colorants: To have zero (0) VOCs and free of hazardous chemicals.
        3. 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.

\*\* NOTE TO SPECIFIER \*\* Firefree88 (Ff88) can be applied to numerous materials, including wood, gypsum board (sheetrock, plasterboard), lathe and plaster, concrete, masonry, embossed/pressed metal tin, thin gauge metal, galvanized steel and aluminum, fiberglass, carbon fiber, plastics, and other composite materials for 1 and 2 hour ratings. Can be used on spray polyurethane foam to achieve a 15-minute barrier. The Ff88 required thickness will vary depending on different factors including substrate,

* + - * 1. assembly and rating desired.
        2. As a result of its' superior fire resistant performance, Firefree 88 can provide significant material and labor cost reductions, resulting in significant savings when compared to other construction options in situations such as construction, both new, retrofit, and defective, (residential, commercial, industrial and government), insulation and transportation. Recommended for historic properties, schools, health care (hospitals, assisted living), apartments, condominium, high-rises, hotels, stores, restaurants, oil and solar facilities, government facilities, military applications and facilities, transportation (aerospace, aviation, light rail, maritime, energy). Delete if not required.
    1. Basis pf Design: Firefree88 (Ff88) as manufactured by Firefree Coatings Inc. A premium waster-based, nontoxic, intumescent latex fire-resistant coating tested to comply with fire ratings performance prescribed under the International Building Code (IBC).
       1. Certifications and Compliance: Tested by Independent ISO/IEC 17025 Accredited Laboratory.
          1. Qualifies For LEED v4 Credit.
          2. CDPH/EHLB Standard Method v1.2, 2017 Emissions.
          3. Master Painters Institute (MPI) Green Performance: GPS1/GPS2.
       2. Properties:
          1. Application State: Liquid. A water-based latex coating.

\*\* NOTE TO SPECIFIER \*\* Ff88 can be tinted by Firefree Coatings for orders over 200 gallons (800 liters).

* + - * 1. Color: White. Finish: Flat: 1.9 to 2.2 at 60. Flat: 0.5 to 1 at 85.
        2. Top Coat: Premium Latex Paint.

Color: White.

* + - * 1. VOC per ASTM D3960: Less than 36 grams per L.

Meets OTC, SCAQMD CARB regulations.

* + - * 1. Volume Solids: 67 percent.
        2. Viscosity per ASTM D562: 115 at 77 degrees F (25 degrees C) kU.
        3. Specific Gravity/Density g/ml per ASTM D1475: 1.272 plus or minus 0.05.
        4. Thinning: Not Recommended.
        5. Shelf-Life: 2 years (unopened).
        6. Comply with fire ratings performance prescribed under the International Building Code (IBC).

Fire resistant testing which measures a product's ability to prevent fire penetration over a period of time.

ASTM E119.

ASTM E162.

ASTM E662.

ASTM E814.

ASTM E1354.

ASTM D3675.

BS 476.

AS 1530.3.

AS 1530.4.

EN 13501-1.

FM 4470 (NFPA 276).

FM 4975.

Fire retardant testing such as ASTM E84 and Room Corner Test standards.

UBC 8-2.

UBC 26-3.

NFPA 286.

* + - * 1. International Code Council (ICC):

ICC-ES: Listed.

ICC-ESL CAN/ULC S102-10: Listed.

LABC-LARC Supplement Listed.

* + - * 1. Classified by Underwriters Laboratories (UL):

UL R14654 Classified on OSB, Douglas fir.

* + - * 1. Listed and labeled by FM Approvals, a division of FM Global.
        2. New York: Material and Equipment Acceptance Division (MEA):

MEA # 320-99: Accepted.

* + - * 1. United Kingdom: Class O, per BS 476 Part 6 and 7.
        2. New Zealand: Class 1-S, per NZBC Verification Method.
        3. Australia: CSIRO, a NATA Accredited Laboratory, Assessed and Certified.
      1. Usage: May be applied to numerous materials for 1 and 2 hour ratings.
         1. Required Thickness: Varies depending on different factors including substrate, assembly and rating desired.
         2. Materials Include but not Limited to: Wood, gypsum board (sheetrock, plasterboard), lathe and plaster, concrete, masonry, embossed/pressed metal tin, thin gauge metal, galvanized steel and aluminum, fiberglass, carbon fiber, plastics, and other composite materials.
         3. May be used on spray polyurethane foam to achieve a 15-minute barrier.
         4. Interior: Made for interior applications.
         5. Exterior: Including meeting the 5 ft ( m) property line:

Top Coat: Firefree Exterior (FfE) Acrylic.

Weatherization per ASTM D2898, method B: Passes.

Substitution of Ff88 or FfE voids any warranty express or implied.

* + - 1. Application: Brushed, rolled, or sprayed using an airless spray gun.
         1. Similar to water-based latex paint except for recommended thickness which needs to be precisely complied with for adequate performance.
         2. Substrate Primers: Primers approved by manufacturer, Rust Oleum, or DTM by other.

\*\* NOTE TO SPECIFIER \*\* Firefree Class A (FfA) can be applied over most combustible materials, including oriented strand board (OSB), plywood, wood joists/trusses, wood paneling/ sheathing and other associated lumber where a fire retardant is needed to slow the spread of fire. As a result of its' superior fire-retardant performance, FfA provides significant material and labor cost reductions, resulting in significant savings when compared to other retardant materials.

* + - * 1. 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.
    1. Basis pf Design: Firefree Class A (FfA) as manufactured by Firefree Coatings Inc. A latex water based, single component, self-priming, flame retardant paint.
       1. Certifications and Compliance: Tested by Independent ISO/IEC 17025 Accredited Laboratory.
          1. Qualifies For LEED v4 Credit.
          2. CDPH/EHLB Standard Method v1.2, 2017 Emissions.
          3. VOC per ASTM D3960: Low. Less than 36 grams per Liter.

Meets VOC regulations for OTC, SCAQMD, and CARB.

* + - * 1. ASTM E84: Application:

\*\* NOTE TO SPECIFIER \*\* Delete application options not required.

Meets 10-minute protection in accordance with Surface Burning Characteristics. Interior usage.

Application: Dry: 6 mils. Wet: 9 mils.

Rating: Class A.

Flame Spread Index: 20.

Smoke developed Index: 90.

Substrate: Wood and combustible surfaces.

Coverage: 178 sq ft per gal.

Application: Dry: 10 mils. Wet: 15 mils.

Rating: Class A.

Flame Spread Index: 5.

Smoke developed Index: 90.

Substrate: Wood and combustible surfaces.

Coverage: 106.5 sq ft per gal.

Meets the extended 30-minute protection in accordance with ASTM E84 Surface Burning Characteristics; Extended E-84, ASTM E2768 for interior applications. Interior usage.

Application: Dry: 8 mils. Wet: 12 mils.

Rating: Class A, Extended 30 minutes.

Flame Spread Index: 0.

Smoke developed Index: 45.

Meets smoke index rating for plenum spaces: Less than or equal to 50.

Substrate: Lumber, Timber, Douglas Fir, Red Oak, Plywood, Yellow Pine, Tongue, and Groove.

Coverage: 133.5 sq ft per gal.

Application: Dry: 20 mils. Wet: 30 mils.

Rating: Class A, Extended 30 minutes.

Flame Spread Index: 0.

Smoke developed Index: 0.

Meets smoke index rating for plenum spaces: Less than or equal to 50.

Substrate: LVLs, OSB.

Coverage: 53 sq ft per gal.

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.

Listing Reports: ESL-1205 and ESL-1206 from ICC Evaluations Services.

Two Product System:

FfA: Ignition Resistant.

Application: Dry: 20 mils. Wet: 30 mils.

Number of Coats: 2.

FfE: Acrylic Topcoat.

Application: Dry: 6 mils. Wet: 12 mils.

Number of Coats: 2.

* + - * 1. International Code Council (ICC): LABC and LARC Supplement.

ICC Listed, ESR4271 LARC.

ICC ESL 1205.

ICC ESL 1213 CAN/ULC.

* + - * 1. Tested to ASTM D5116: Organic Emissions.
        2. Can earn LEED credits per Method v1.2, 2017.
        3. California State Fire Marshall: Approved. BML Listing No 2280-2112 Flame Spread.
      1. Properties:
         1. Color: White. Finish: Flat. Anti-Microbial.
         2. Volume Solids: 67 percent.
         3. Exterior: Including meeting the 5 ft ( m) property line:

Top Coat: Firefree Exterior (FfE) Acrylic.

Weatherization per ASTM D2898, method B: Passes.

Substitution of FfA or FfE voids any warranty express or implied.

* + - 1. Application: Brushed, rolled, or sprayed using an airless spray gun.
         1. Similar to water-based latex paint except for recommended thickness which needs to be precisely complied with for adequate performance.

\*\* NOTE TO SPECIFIER \*\* FfE is a required component of the Firefree Exterior System. The system is designed to provide fire ignition resistance benefits, per ASTM E84 30 Minute Extended, in exterior applications (walls, sidings, eaves, soffits), thus improving fire retardation for structures exposed to wildfires and bushfires.

* + - * 1. The Firefree Exterior System has two components:
        2. -Firefree Class A: 20 mils dry to provide the fire-retardant abilities.
        3. -Firefree Exterior Topcoat: 6 mils dry over FfA to protect from exterior weathering.
        4. FfE on its own does not have any fire-retardant properties.
        5. Delete options not required.
    1. Basis pf Design: Firefree Exterior Topcoat (FfE) as manufactured by Firefree Coatings Inc. A proprietary, premium, 100 percent acrylic resin, protective coating used exclusively over surfaces coated with Firefree Class A (FfA) or Firefree 88 (Ff88), to improve product durability in exterior applications.
       1. Certifications and Compliance:
          1. International Code Council (ICC): Complies with the following.

ASTM D2898, method B. Over Ff88 and FfA products.

ICC ESL 1205.

SCAQMD: CARB.

CARB: Yes.

LEED V3: Yes.

GS-11: Yes.

AIM: Yes.

VOC Less than 50 grams per Liter: Yes.

* + - 1. Physical Characteristics:
         1. Resin Type: 100 percent Acrylic.
         2. Color: White. Finish: Satin. 20 to 30 at 60 degrees F.

Tint Bases: White. Maximum Tint: 4oz/Gal.

* + - * 1. Color: Deep Base. Finish: Satin.
        2. Top Coat: Premium Latex Paint.

Color: As determined by the Architect.

Color: As detailed on the Drawings.

* + - * 1. Weight: 10.69 lbs per gallon (4.85 kg).
        2. Solids by Weight: 55 percent.
        3. Solids by Volume: 42.9 percent.
        4. VOC: Less than 6.09 oz per gallon (50 grams per Liter).
        5. Drying Time: Must be dry to the touch. Drying times vary depending on temperature, humidity, and natural conditions.
        6. Coverage: 229 sq ft per gallon (5.62 sq m per L) at 6 mils wet / 3 mils dry per coat.
        7. Coats Required: 2 coats. Total 6 mils dry.
        8. Application Temperature: 40 degrees F (4 degrees C) or higher.
      1. Usage: Must be used over the Firefree line of intumescent coatings to provide durability on exterior weather conditions.
         1. Firefree intumescent coatings, FfA or Ff88, must be applied to the recommended uniform dry film thickness specified by Firefree Coatings to meet the specified levels of fire protection.
      2. Application: Brushed, rolled, or sprayed using an airless spray gun.
         1. Similar to water-based latex paint except for recommended thickness which needs to be precisely complied with for adequate performance.

\*\* NOTE TO SPECIFIER \*\* The Firefree System can be used to harden building structures and can be applied to wall sidings, eaves, soffits, building projections, and overhangs to assist in the hardening and fire protection of buildings against wildfires and bushfires. In addition to its fire ignition- resistant properties, the exterior intumescent paint system can also assist with protection from radiant heat exposure and wind-blown embers. Delete options not required.

* + 1. Basis pf 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 protectionin 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.
          1. Component No. 1: Firefree Class A. Provides the fire ignition resistant properties.

Application: Dry: 20 mils. Wet: 30 mils. Coats: 2

Coverage: 53 sq ft per gallon (1.3 sq m per Liter).

* + - * 1. 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.

Application: Dry: 6 mils. Wet: 12 mils. Coats: 2.

Coverage: 53 sq ft per gallon (1.3 sq m per Liter).

* + - 1. Certifications and Compliance:
         1. ASTM WUI test standards: Passes.
         2. International Code Council (ICC):

Listed: Fire ignition resistant.

Listed: Weather resistant.

* + - * 1. ICC Evaluation Service (ICC-ES): The system complies with the following.

ASTM E2768-11 ignition resistance; ASTM E84 30 Minutes Extended.

ASTM D2898-10 weatherization. 2018 International Wildland Urban Interface Code prescribed under Section 503 Ignition Resistant Materials.

* + - * 1. 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.
      1. Does not need to be reapplied yearly.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
      3. 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 .Begin coating only when moisture content of wood substrate is 15 percent or less when measured with an electronic moisture meter.
      4. Begin coating no sooner than 28 days after substrate is constructed and is visually dry on both sides.
      5. Verify suitability of substrates, including surface conditions, and compatibility with existing finishes and primers.
      6. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
      7. 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.
   2. PREPARATION
      1. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.
      2. 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.
      3. 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. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
      2. 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.
      3. Apply coatings to prepared surfaces as soon as practical after preparation and before subsequent surface soiling or deterioration.
      4. 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.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
     2. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
     3. 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.
     4. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

END OF SECTION