

SECTION 09960

INTUMESCENT COATINGS for STRUCTURAL STEEL APPLICATIONS
(Contego HS and Original Formula)
(Edit points in red)

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**** NOTE TO SPECIFIER ** Contego International; intumescent coatings.**

**This section is based on the products of Contego International, which is located at:
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Carmel, IN 46032
Toll Free: 800-434-6444
Phone: 317-580-0665
Email: info@contegointernational.com
Web: www.ContegoFireBarrier.com**

Contego is Latin for "to shield, defend, or protect". That is also the mission of our group. Today, Contego affiliates around the world offer solutions to the commercial and industrial sector as well as consumers. Structures and materials treated with Contego Fire Barrier Latex offer a level of security and safety that can be measured in lives saved and property losses that are averted.

Contego was formed in 2000 for the express purpose of seeking out the best fire prevention products available and expanding their use through refinement, education and exposure.

Our goal is to make the world a safer place. Our Fire Barrier Latex is formulated to deliver important benefits at a significantly lower cost per square foot applied. Thank you for taking the time to learn more about Contego International and looking for ways to be a part of our worldwide family.

PART 1 PRODUCTS

1.1 SECTION INCLUDES

- A. Intumescent coatings.

1.2 RELATED SECTIONS

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

- A. Section 05120: Structural steel and framing with reference to primer receiving fire protection materials.
- B. Section 09900 - Paints and Coatings: Field painting not specified in this Section.

1.3 REFERENCES

- A. ANSI A2.1 - Standard Test Method for Fire Tests of Building Construction and Materials.
- B. ASTM International:
 - 1. ASTM D 1475 - Standard Test Method For Density of Paint, Varnish, Lacquer, and Related Products.

2. ASTM D 2369 - Standard Test Method For Volatile Content of Coatings.
 3. ASTM D 3359 - Standard Methods for Measuring Adhesion by Tape Test (Methods A and B)
 4. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
 5. ASTM D 4017 - "Standard Test Method for Water in Paints and Paint Materials by Karl Fischer Method.
 6. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 7. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 8. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 9. ASTM E 662 - Standard Guide for Measurement of Gases Present or Generated During Fires.
- C. AZ/NZS 1425:2007 - Western Australia DOC Test for LPG Storage Containers.
- D. BSS 476 - Standard Test Method for Fire Tests of Building Construction and Materials.
- E. BSS 7239 - Test Method for Toxic Gas Generation by Materials on Combustion.
- F. UBC 8.1 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- G. DIN 4102, Part 8 - Standard Test Method for Fire Tests of Building Construction and Materials.
- H. National Fire Protection Association (NFPA):
1. NFPA 251 - Standard Test Method for Fire Tests of Building Construction and Materials.
 2. NFPA 255 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 3. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room.
- I. UL 263 - Fire Tests of Building Construction and Materials.
- J. UL 723 - Test for Surface Burning Characteristics of Building Materials.
- K. UL-C-S101 - Standard Test Method for Fire Tests of Building Construction and Materials.

- L. Uniform Building Code (UBC):
 - 1. UBC 7-1 - Standard Test Method for Fire Tests of Building Construction and Materials.
 - 2. UBC 26-2, Test Method for Evaluation of Thermal Barriers.
 - 3. UBC 26-3, Room Fire Test Standard for interior of foam plastic systems met all criteria.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Verification Samples: For each finished product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product and finish.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store all materials in manufacturer's unopened, labeled packaging until ready for installation.
- B. Store above 65 degrees F (18 degrees C) for 48 hours prior to application.

1.6 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 absolute limits.
- B. Do not expose applied product to rain, dew, snow, heavy fog, condensation or other forms of accumulated moisture or precipitation before having dried completely and a top coat of acrylic enamel, designed for the ambient environment, has been applied and allowed to dry.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Contego International, Carmel, IN 46032; Toll Free Tel: 800-434-6444; Tel: 317-580-0665; Email: [request info \(info@contegointernational.com\)](mailto:info@contegointernational.com)

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

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

**** NOTE TO SPECIFIER ** Contego Passive Fire Barrier is a heavy-bodied, single-part latex designed for use on construction materials such as Oriented Strand Board (OSB), Structural Insulated Panels (SIPS), framing lumber, plywood, trusses, drywall, doors, and more. May also be used on aluminum and steel sheets, and structural steel including round and box steel columns.**

2.2 MATERIALS

- A. Contego Passive Fire Barrier Intumescent Latex Paint: As manufactured by Contego International.
1. Color: White.
 2. VOC (Less Water): 0 Grams/Litre.
 3. Weight/US Gallon: 10.8 lbs. (11.2 for HS Version)
 4. Hazardous Ingredient: N/A.
 5. WHMIS Class: Not Controlled.
 6. Flammability: Not Flammable.
 7. Weight Solids: 52.93 percent. (62.45 for HS Version)
 8. Volume Solids: 43.7 percent. (68.3% for HS Version)
 9. Specific Gravity: 1.29. (1.67 for HS Version)
 10. pH Range: 8.0-8.5.

**** NOTE TO SPECIFIER ** Refer to manufacturer's website for additional test results on a wide range of materials.**

- B. Testing Compliance:
1. ANSI/UL723 Class A Doug Fir. (a=10 minutes, b=Extended to 30 minutes)
 - a. Results: Average Flame spread Index 0; Smoke Index 0, Class A.
 - b. Results: Average Flame spread Index 0; Smoke Index 5, Class A.
 2. ASTM E 119/UL-263/UBC 7.1, ANSI A2.1/ULC-S01/NFPA 251:
 - a. Results: Ranged from 103 to 121 minutes. STEEL "I" Beams Unrestrained.
 - b. Steel Plate: ASTM 119 UL-263 ON .250 Plate 73 mil coating of Contego achieved 126 minutes (1000 degrees F, 538 degrees C unexposed surface) Unrestrained.
 - c. Steel Beams and Decking With 4 Inches Concrete: ASTM 119 UL-263 with 58 mil coating of Contego achieved 87 minutes (1100 degrees F, 593 degrees C unexposed surface) Unrestrained, 174 minutes Restrained.
 - d. 0.500 Steel Plate: ASTM E 119/UL-263/UBC 7.1, ANSI A2.1/ULC-S01/NFPA 251 Top Coated with 60 mils and Acrylic Enamel. The thermocouples exceeded an average of 1,200 degrees F (649 degrees C) at 2:21.50 proving that top coating adds 25% to 32% to the total fire resistance.
 3. NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room. Met all criteria.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. If preparation is the responsibility of another installer, notify Architect of deviations from manufacturer's recommended installation tolerances and conditions.
- B. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Surfaces must be clean, dry, and free of any grease, oils or other contaminants. Previous layers of paint must be solidly adhered to the surface

with no flaking, chipping, or cracks.

1. Remove hardware, hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
2. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
3. Cleaning: Before applying coatings or other surface treatments, clean substrates of substances that could impair bond of intumescent paint systems.
4. Schedule cleaning and painting application so dust and other contaminants will not fall on wet, newly painted surfaces.
5. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified. Coordinating shop-applied primers with finish coats is critical. If compatibility problems develop, it may be necessary to provide barrier coats over shop-applied primers or to remove primer and reprime substrate.

C. Commencement of installation constitutes acceptance of conditions.

3.2 INSTALLATION

A. Installation General: Install in accordance with Manufacturer's printed instructions.

1. Product must be mixed thoroughly before application. Manufacturer recommends using a mixing paddle with power drill for a minimum of three 3 minutes at highest speed. Concentrate on bottom of bucket periodically moving to the middle and top areas.
2. Product is properly mixed when:
 - a. There are no solids attached to the paddle after mixing at the bottom.
 - b. Paint shows a uniform consistency when mixed at the surface.
3. Do not dilute or thin this product with any other liquid.

B. Priming Requirements:

1. Bare steel must always be primed with red oxide primer or manufacturer approved equivalent prior to applying the Contego product.

**** NOTE TO SPECIFIER ** Product may be applied as any other high quality latex based paint: brush, roller, airless spray as described below.**

C. Application: Apply intumescent paints according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable paint film.
 2. The Original formula (Type R, 50% solids) can be applied with a brush, roller, mitt or spray gun. The HS (High Solids) variant can only be applied with a spray gun.
 3. Spraying is the recommended method for either application. The recommended spray setup is 2400 psi (165 bar) with a 0.025 - .032 inch tip (0.63 - .813 mm). All Contego test applications are performed using a Graco XR5, but other commercial quality, positive displacement, airless spray guns are acceptable. If using the HS (High Solids) variant, use a spray gun with 3,600 psi with a 0.036 tip or bigger. In either case, spray a test patch to make sure the product is being properly atomized without clogging the nozzle or other parts of the spray gun.
 4. NEVER allow the Contego coating to be exposed to rain, dew, snow, heavy settling fog, water spray or other forms or condensation until completely dry to protected with a suitable top coat. ALL exterior applications must be top coated. The Contego finish must be protected until a suitable top coat has been applied and allowed to dry.
 5. Optimal application temperature is 75 degrees F (41 degrees C); application below 45 degrees F (25 degrees C) is not recommended.
 6. Provide finish coats that are compatible.
 7. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 8. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.
- D. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Film thickness required is the same regardless of application method or whether applying Type R or HS.
 2. Do not apply succeeding coats until previous coats have dried completely as recommended by manufacturer. If sanding is required to produce a smooth, even surface, do so according to manufacturer's written instructions.
 3. If undercoats, stains, or other conditions show through the final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow enough time between successive coats to permit complete

drying. Drying time between coats depends on ambient temperature, humidity and the thickness of the coat. Do not recoat surfaces until paint has dried thoroughly, not just dry to the touch. Applying additional coats of Contego before existing coats have dried thoroughly can trap moisture under the surface film and cause the finish to loose adhesion or crack.

E. Application Procedures: Apply coatings by brush, roller, spray, or other methods according to manufacturer's written instructions.

1. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
2. Prime Coat: Before applying Contego on steel, apply a prime coat, as recommended by manufacturer, to substrates required to be painted that have not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas appears in the first coat.
3. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate for surface to be coated. Provide total dry film thickness of entire system as recommended by manufacturer. This varies between different substrates and the kind of rating needed.
4. Produce a smooth surface film using multiple coats. Provide a finish free of laps, runs, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
5. Completed Work: Match approved samples for texture and coverage. Remove, refinish, or repaint work not complying with specified requirements.

F. Coverage: Coverage varies depending on the thickness of the Contego coating applied and that depends on the weight of the steel, whether or not it is restrained, whether or not it is top coated and the fire resistance rating needed. The dry thickness of each coat depends on the wet thickness applied. Structural steel requires between 5 and 170 dry mils, so multiple coats may be required as shown in our Hp/A regression tables for either version of the product being used.

Generally, you can apply a maximum of 20 wet mils using our Type R before running the risk of sags or runs with the Regular Version and 35 mils with the HS version, but your actual maximum thickness also depends on ambient temperature and humidity. Keep in mind that it is difficult or impossible to lay down the maximum wet film thickness using a brush, roller or mitt. To maximize your wet film thickness per pass, use a spray gun as discussed in this section.

**** NOTE TO SPECIFIER ** Delete if not required.**

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G. Structural Steel: A final dry film coating of 5 to 170 mil (0.25 to 4.32 mm) is recommended for adequate protection. The thickness needed depends on the W/D, Hp/A or A/P ratios of the steel being protected. Under proper conditions it is possible to achieve this with multiple coats of 20 mil (0.50 mm) wet (36 mils wet for the HS Version). Under less than ideal conditions, it may be necessary to apply more at a lesser thickness until the total required dry film thickness is achieved. In all cases the next coat may be applied when the prior is completely dry.

**** NOTE TO SPECIFIER ** Top coating is optional but HIGHLY recommended since the use of a top coat improves Contego's fire resistance 25% to 32%. However, exterior**

applications MUST be top coated with an exterior grade acrylic enamel. Delete if not required.

- H. Top Coating: To add color or sheen to surfaces, Contego PFB may be top coated using virtually any alkyd, or latex based acrylic enamel paint as soon as the intumescent coating is completely dry. To top coat with acrylic or latex, spray or roll initial color coat.
 - 1. If using a roller, do not try to re-roll or touch up until your initial color coat is dry.
 - 2. Failure to wait for the first color coat to dry will cause the first color coat to smear or back-roll off the wall.
 - 3. Once first color coat of latex/acrylic is dry apply second coat.
 - 4. Top coating does not reduce intumescent capability and, in fact, improves our fire resistance as discussed earlier.
- I. Tinting is possible, but to pastel shades only. Limit tint to 10 percent of paint volume. However, since top coating is both possible and recommended, use a top coat to achieve the exact color and sheen desired.

3.3 CLEANING AND PROTECTION

- A. Cleanup: At the end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by proper methods. Be careful not to scratch or otherwise damage adjacent finished surfaces.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is completed, touch up and restore damaged or defaced surfaces.
 - 2. Exterior applications must be protected by a tarp, tenting, or other method to avoid exposure to rain, dew, snow, condensation, heavy fog or other forms of accumulating moisture.

END OF SECTION