

# International Fireproof Technology Inc

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Submittal

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# DC315 Intumescent Coating

## Description

DC315 is a single component, water based intumescent coating tested to meet Building Code requirements for the fire protection of Spray Polyurethane Foam (SPF). Tested and evaluated in the USA by UL and ICC-ES, and in Canada by ULC and CCMC.

DC315 is fully AC456 Compliant and satisfies the International Building Code (IBC), International Residential Code (IRC), National Building Code of Canada (NBCC) and many other National and International building codes.

DC315 offers more tested systems to meet interior thermal and ignition barrier requirements AND DC315 has been tested as a component of exterior wall systems in accordance with the NFPA 285 meeting IBC Section 2603.5 AND DC315 has been tested to provide up to a 1 hr. fire resistance rating.

**The Choice is clear, DC315 is the most tested and approved fire protective coating for SPF insulation on the market today!**



## DC315 Tested Solutions for Spray Polyurethane Foam

- Certified full scale alternative Thermal and Ignition Barrier tests over SPF
- Code Compliance Evaluated by [ICC-ESR 3702](#) for the **USA market**
- Code Compliance Evaluated by [CCMC #14036-R](#) and [ULC ER39793](#) for the **Canadian market**
- NFPA 285 Tested and Listed by UL [File R40016](#) as a component of exterior wall systems with various architectural claddings
- [ICC-ESL 1577](#) and [ICC-ESR 3702](#) Listed for up to 60 minutes in accordance with ULC S-101 and ASTM E119
- DC315 manufacturing facilities are [3rd party Listed](#) and Inspected
- Tested useful life, fire performance not compromised after 50 years.
- Topcoat for color, weather and moisture protection, tested full scale via NFPA 286
- [ANSI 51](#) testing for incidental food contact
- Passed [CA-1350](#) - qualifies DC315 as a low-emitting material for [LEEDS](#) and Green Building standards
- Passed strict EPA – [VOC](#) and AQMD air emission requirements
- No formaldehyde, RoHS
- Meets Life Safety Code NFPA 101

## Specifications:

Finish:	Flat
Color:	Ice Gray, White and Charcoal Black
V.O.C.:	10.3 g/l TVOC 18.6 g/l VOC Less Water
Volume Solids:	67%
Drying Time:	To Touch: 1-2 hours recoat: 4 to 8 hours
Type of Cure:	Coalescence
Flash Point:	None
Reducer/Cleaner:	Water
Shelf Life:	18-24 months (unopened)
Packaging:	5- & 55-gallon containers
Shipping weight:	5-gallon pail - 58 lbs. 55-gallon drum - 640 lbs.
Application:	Brush, roller, airless spray
Application Rate:	Max 24 mils WFT per coat
QAI Listed:	File B1117

**International Building Code Fire Performance Requirements for SPF:** The International Building Code (IBC) Section 2603.4 mandates that SPF be separated from the interior of the building by a ½" gypsum board on an **NFPA 275** tested covering, unless specifically tested in accordance with Section **2603.9**. DC315 passed certified **NFPA 286** testing over all major brands and types of open and closed cell spray applied polyurethane foams. This finished assembly testing complies with the requirements of IBC Section 2603.9 and Section 803.1 and allows the coated assembly to be left exposed without covering in the prescribed gypsum board or NFPA 275 thermal barrier.

**Alternative Ignition Barrier Assemblies:** DC315 meets the requirements for ignition barrier protection in unoccupied spaces as per **AC 377, Appendix X**.

**Exterior Wall Systems:** DC315 has been tested as a component of exterior wall systems in accordance with the NFPA 285 and meets 2015 IBC Section 2603.5 with various architectural cladding options.

**National Building Code of Canada:** DC315 prevents flashover for 10 minutes for Combustible Construction or 20 minutes for Non-Combustible construction when tested to the CAN/ULC S-145 Standard. This testing has been shown to exceed the protection of CAN/ULC S-124 tested materials and meets the Intent of NBC Section 3.1.5.12 for the protection of foamed plastics.

**60- Minute Fire Resistance Rating for Steel Buildings-** DC315 has been tested in accordance with CAN/UCL S-101 and ASTM E119 and has met the conditions of acceptance for exterior walls in steel building applications

**European Union:** DC315 has been tested over both medium density and low-density spray polyurethane foam and provides an EN13501- 1 Fire Classification of B-S2-D0.

**Australia and New Zealand:** DC315 has been tested to the AUS ISO- 9705 standard over spray polyurethane foam and meets Group 2 Classification. ISO5660 (part 1 and 2) tests confirm Group number classification as 1 which allows for the addition of the thermal barrier coating to upgrade the fire rating of the underlying spray foam.

**END USE APPLICATIONS:** DC315 is designed as an interior Fire Protective Coating used to protect spray foam insulation from the interior conditioned space of a building. DC315 can also be used in many different applications such as cold storage, parking garages and agricultural buildings by following a few additional steps to address these types of environments. When installing DC315 in unconditioned spaces the coating and the SPF are exposed to variations in environment that needs to be accounted for by the installer/end user, when designing the full system. Care needs to be taken to ensure that the correct products are specified based on the expected service or environmental conditions. Topcoats are not required to meet the certified fire testing however should be considered for use where/when conditions warrant. Suitability for a particular end use condition shall be determined by code and inspection authorities, architects, specifiers, contractors, installers or any end user of DC315. **This guide does not purport to address all unconditioned or conditioned environmental concerns if any, associated with a specific project.**

## Testing

### USA

- **ASTM E84** - Flame Spread 0 Smoke 10
- **NFPA 286** - Complies with IBC/IRC
- **ASTM E2768** - 30-minute Ignition Resistant Material
- **NFPA 285** - Exterior Wall System with various claddings
- **ASTM E119** 60-minute fire resistance rating

### Canada

- **CAN/ULC S102** - FSR 0 SDC 25
- **CAN/ULC S 101** – up to 1 hr assembly rating
- **CAN/ULC 9705** - 10- and 20-minute testing
- **CAN/ULC S-145** – 20 Minute Rating

### European Union

- **BS 476 Part 6 & 7**
- **BS EN ISO 11925-2**
- **EN 13823**
- **EN 13501** Classification B-S2-d0

### Australia/New Zealand

- **AUS ISO 9705**
- **AS/NZS 1530.3**
- **AS 5637.1** Group Classification 2, NZBC Group 2-S
- **ISO 5660** Parts 1 and 2

### Physical Properties Testing

- **ASTM D522** Flexibility, Mandrel Bend
- **ASTM D4541** Adhesion pull off strength
- **ASTM D4585** Moisture resistance for 100 hours
- **ASTM D4587 / ASTM G154** Accelerated Weather QUV 1000 hours
- **ASTM D3359** Tape Adhesion
- **ASTM D2486** Scrub Resistance
- **ASTM E661** Durability, Impact, Concentrated load



# "Best Practices" & Application Guide

For use by code and inspection authorities, architects, specifiers, contractors, installers or any end user of IFTI products

To confirm the installation complies with "IFTI's Best Practices" and is compliant with Code Evaluation Reports, applicators shall ensure copies of all application documents are available on site and the application of DC315 meets their intended needs. Installation documents can be downloaded at [www.painttoprotect.com](http://www.painttoprotect.com) Call IFTI at 949.975.8588 for current copies or with questions.

[Job Work Records](#) and [Jobsite Labels](#) are an excellent way to track your installations and confirm compliance to your Building Official or Authority Having Jurisdiction. In the event of a concern on a job the installer can provide documented proof of the installation, use these forms for all thermal or ignition barrier projects.

**Prior to Applying DC315 :** Adhesion of a coating to SPF requires the foam surface to have a slight profile or texture like an orange peel. ([click here for our video](#)) Smooth, glossy foam surfaces should be flash coated with a light 3 - 4 mils Wet Film Thickness (WFT) of DC315 before applying the full application. Flash coating is a quick burst of DC315 or a primer\* via airless sprayer over an area needing treatment. **\*Note - primer is required for all applications in Canada refer to [CCMC #14036-R](#).**

**Allow foam to cure and cool to ambient conditions prior to applying DC315, minimum 1 hour.**

**Surface Preparation:** All surfaces to be coated must be clean, cured, firm, dry and free of dust, dirt, oil, wax, grease, mildew, and efflorescence. The quality of any application is only as good as the surface preparation that precedes the application. DC315 has excellent bonding characteristics and will adhere to most sound, clean, foam surfaces. Verify that the surface of the foam is free of gouges, holes, and exposed cells. Also, verify the surface is stable, and not crumbling or deteriorated. If any such defects are found, make sure to repair them prior to proceeding

**Material Preparation:** DC315 must be thoroughly mixed before application. It is required to perform mechanical stirring with a medium speed drill and a paddle appropriate for the size container you are working from. Contents should be stirred from the bottom up making sure to scrape the bottom and sides with a paint stick as you go. Contents should be stirred to a creamy consistency with no lumps. Continue mixing for 4-5 minutes per 5- gallon pail, 15-20 minutes per 55-gallon drum. Thinning is usually not needed. If DC315 has been exposed to high heat, water may evaporate from the plastic 5-gallon container. If the paint level is below 3 inches from the top of the container, continue to mix and SLOWLY add just enough water to restore a sprayable consistency. Use Caution not to add too much water or product will run and drip during application. Check out our [Video on Mixing](#)

**DC315 Viscosity:** DC315 is a 10,000 - 12,000 viscosity coating at 75°F. When you open a container of DC315 it may appear thick before it is mixed, ensure proper temperature and remix for 4-5 minutes and recheck. Thin with water only if required as described under material preparation.

**Temperature:** PROTECT FROM FREEZING DURING SHIPMENT, STORAGE, AND USE. DC315 is water-based coating which will freeze and become unusable at temperatures below 32°F. Do Not store material at temperatures below 50°F. Do Not apply DC315 when ambient air and substrate temperatures fall below 50°F. Store

DC315 at 50°F to 80°F at all times. Do Not store DC315 on concrete floors during winter months. Do not store in direct sunlight. IFTI recommends an ideal installation temperature range of 62°F to 90°F. Contact IFTI for applications outside these temperature ranges.

**Humidity:** Ideal conditions are 50-65% relative humidity. Curing times are significantly affected when humidity levels exceed 70%. It is imperative that humidity is monitored throughout the application and curing process. 65% humidity at the beginning of the job will quickly rise as the coating is installed. Continue monitoring humidity until the coating has fully cured. For additional information on using DC315 in high or low humidity **Download a copy of our [Ventilation Guide](#)**, or this [Guide on Moisture Control](#) In Spray Foam Homes contact IFTI at 949.975.8588 or email us at [ptp@painttoprotect.com](mailto:ptp@painttoprotect.com).

**Ventilation:** Fans may be required to circulate the air during application, especially in high or low humidity. Air flow must be across the area DC315 was applied, but not directly on it. If the relative humidity is greater than 85% at the end of spraying and cross ventilation is not drastically reducing it, then a mechanical dehumidifier is required. **Download a copy of our [Ventilation Guide](#)**, or this guide on the importance [of ventilation in spray foam tight homes](#).

**IMPORTANT- Mechanical ventilation, if not already present, may be required to remove moisture and avoid the accumulation of odors.** When spraying in enclosed spaces, such as attics use an "exhaust" blower at one end of the enclosed space and run a hose to the exterior of the building to remove stale air. Using a "supply" blower at the opposite end of the enclosed space and a hose from the exterior to maintain a negative pressure compared to the surrounding area, maintaining at least 0.3 air changes per hour for 48-72 hours following application.

Improper installation practices that do not address temperature, humidity and ventilation may impact on the coatings ability to cure and should be avoided.

**Application Equipment:** It is recommended to apply DC315 with an airless sprayer to achieve a more consistent mil thickness. In challenging areas where an airless sprayer is not practical, DC315 can be applied by brush or roller. **Download a copy of our [Recommended Sprayers Guide](#)**

When using airless spray equipment ensure the equipment has a volume output not less than 1.0 gpm (gallons per minute) at an operating pressure of 3000 psi. Remove all filters from Machine and gun (if present). Proper atomization requires proper pressure and delivery of coating to the spray gun.

Use the following rules for hose diameter & length:

- Min. 3/8" ID up to 75'
- Min 1/2" ID up to 200'
- Min 3/4" ID greater than 200'
- Min 3/16" ID & Max 6' L for whip hose

Always place larger diameter hose sections nearest the pump. We recommend using a gun tip with an orifice size of .517 - .525 depending on machine size and application conditions.



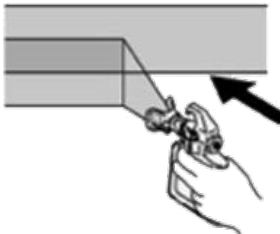
**Proper equipment and settings** are key to ease of application. Remove all filters from machine and gun. DC315 requires high pressure to atomize the coating at the spray tip, correct atomization will yield a more consistent spread rate and easier coverage of uneven surfaces. Ensure you match your tip size to your machine - this is critical to ensure correct pressure at the spray tip. If the spray pattern has fingers or tails, then the pressure should be increased. If the maximum pressure of the sprayer is not enough to achieve a good spray pattern, a spray tip with a smaller orifice should be used. A good spray pattern indicates that the paint or coating is completely



atomized and distributed evenly on the surface. Hose length should be appropriate for your machine and always ensure your feed hose is larger than your whip. Having a smaller whip will serve to re-pressurize the coating at the spray gun and assist in correct atomization of the coating.

**Spraying DC315 for Maximum Yield:** If this is the first time using DC315 we suggest testing a pre-measured area to get a feel for spraying and yield. Example, if the job requires 14 wet mils or 115 ft<sup>2</sup> per gallon, then a 5-gallon pail would cover 575 ft<sup>2</sup>. Monitoring the amount of material used for the area coated will ensure applicators are meeting the fire rating while avoiding over application.

**Overlapping Technique:** Check out our video on the [overlapping technique](#) which helps ensure that an even amount of coating was sprayed onto the surface. The spray gun should be aimed so that the tip points at the edge of the previous stroke, therefore overlapping each stroke by 50%. To maximize efficiency when spraying on broad or open surfaces (e.g. ceilings and bare walls), the outside edges of walls should be sprayed first. The middle can then be sprayed quickly requiring less precise strokes. Given the inherent surface contours of SPF, we suggest spraying side to side followed by an up and downstroke, referred to as Cross Hatch or X-Out pattern.



**Coverage Rates:**  
Check appropriate test or evaluation report for required wet film thickness (WFT) and gallon per square coverage required to meet the specified rating required for your jurisdiction. **DO NOT EXCEED 24 mils WFT in one coat.** If the required thickness is greater than 24 mils, then installers must apply multiple coats with a minimum 4 hr. dry time between coats.

Theoretical coverage rates are listed below:

WET	Sq.Ft. Per Gallon	Sq.Ft. Per 5 Gallon
4 WFT	400 Sq.Ft. Per Gallon	2000 Sq.Ft. Per 5 Gallon
14 WFT	115 Sq.Ft. Per Gallon	575 Sq.Ft. Per 5 Gallon
24 WFT	67 Sq.Ft. Per Gallon	335 Sq.Ft. Per 5 Gallon
34 WFT	47 Sq. Ft. Per Gallon	235 Sq Ft Per 5 Gallon

To calculate your Theoretical Application Rate (TAR) in gallons per 100 square feet, use the following equation:  $TAR = (WFT)/16$ . Actual coverage rate will vary based on surface texture, over-spray, and miscellaneous losses. It is very important that additional material be added to the theoretical quantities to ensure that the proper minimum coating thickness is applied.

### Measuring Wet Film Thickness (WFT)



Figure 1

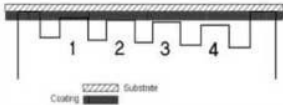
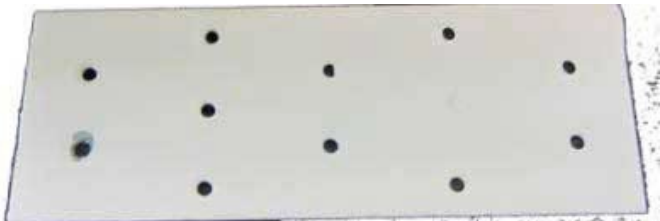


Figure 2

**How to Use a Wet Film Thickness Gauge:** A WFT gauge is designed to give the spray applicator immediate Wet mil measurement of the film build that has just been sprayed. Download our [How To Measure Wet Film Guide](#) or [Watch our Video](#) **Technique:** When placing the gauge on a freshly painted area, the gauge must be placed at a 90-degree angle to the substrate and pressed firmly to ensure correct depth. The applicator also needs to be aware of variations in the surface that may influence the reading. For example, if the surface is not perfectly flat, one direction may give a more accurate reading than the other.

To use the WFT gauge, place the gauge directly on the wet area just sprayed as described above. See figure 2, the notches will indicate the measured film thickness. For example, if the 18-mil notch is wet and the 20-mil notch is dry, then the wet measured thickness is 18 mils.

**Medallions:** For Wet and Dry Film Thickness verification and ease of measuring the applied coating, IFTI suggests placing metal plates (aka Medallions) to the surface of the foam, roughly 1 per 400 sq ft depending on project size, applicators shall use common sense for appropriate the number and use of medallions. These plates are available at most hardware stores. IFTI recommends writing the job date and applicator name on the back of each plate. Measuring WFT on the front side of the plate will give the most accurate reading. Collect these plates at the end of the job, touch up, and keep them on file or at the job site. Medallions allow for future verification of the Dry Film Thickness (DFT) using calipers, micrometers, electronic or magnetic measuring tools. They are a great tool to present your code official or Fire Marshall



Safety Data Sheets (SDS) are available on this coating material. Any individual who may come in contact with our products should read and understand the SDS. In case of emergency contact CHEMTREC EMERGENCY NUMBER at 800-424-9300.

**WARNING:** Avoid eye contact with the liquid or spray mist. Applicators should wear protective clothes, gloves and use protective cream on face, hands, and other exposed areas.

**EYE PROTECTION:** Safety glasses, goggles, or a face shield are recommended.

**SKIN PROTECTION:** Chemical resistant gloves are recommended, cover as much exposed skin area as possible with appropriate clothing.

**RESPIRATORY PROTECTION IS REQUIRED:** Respiratory protective equipment, impervious footwear and protective clothing are required at all times during spray application.

**INGESTION:** Do not take internally.

Consider the application and environmental concentrations in deciding if additional protection is necessary.

#### Limitations:

DC315 is designed as an interior Fire Protective Coating used to protect spray foam insulation from the interior conditioned space of a building. DC315 can also be used in many different applications such as cold storage, parking garages and agricultural buildings by following a few additional steps to address these types of environments. When installing DC315 in unconditioned spaces the coating and the SPF are exposed to variations in environment that needs to be accounted for by the installer/end user, when designing the full system. Care needs to be taken to ensure that the correct products are specified based on the expected service or environmental conditions. Topcoats are not required to meet the certified fire testing however should be considered for use where/when conditions warrant. Suitability for a particular end use condition shall be determined by code and inspection authorities, architects, specifiers, contractors, installers or any end user of DC315. **This guide does not purport to address all unconditioned or conditioned environmental concerns if any, associated with a specific project.**

#### Limited Warranty:

This product will perform as tested if applied and maintained according to our directions, instructions and techniques. If this product is found to be defective upon inspection by its representative, the seller will, at its option, either furnish an equivalent amount of new product or refund the purchase price to the original purchaser of this product. Seller will not be liable for any representations made by any retail seller or applicator of the product. THIS WARRANTY EXCLUDES (1) LABOR OR COST OF LABOR FOR THE APPLICATION OR REMOVAL OF THIS PRODUCT OR ANY OTHER PRODUCT, THE REPAIR OR REPLACEMENT OF ANY SUBSTRATE TO WHICH THE PRODUCT IS APPLIED OR THE APPLICATION OF REPLACEMENT PRODUCT, (2) ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER LIMITATIONS APPLY.

For the complete terms of the limited warranty, go to [www.painttoprotect.com](http://www.painttoprotect.com). Some states/provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. To make a warranty claim, write to **Technical Service:**

International Fireproof Technology, Inc.

17528 Von Karman Avenue  
Irvine, CA 92614

Or email Customer Service at [ptp@painttoprotect.com](mailto:ptp@painttoprotect.com)





CANADIAN CODE  
COMPLIANCE EVALUATION



## CCMC 14036-R

### CCMC Canadian code compliance evaluation

CCMC number:	14036-R
Status:	Active
Issue date:	2016-06-03
Modified date:	2022-12-05
Evaluation holder:	<b>International Fireproof Technology Inc.</b> 17528 Von Karman Avenue Irvine CA 92614 United States Website: <a href="http://www.painttoprotect.com">www.painttoprotect.com</a> Telephone: 949-975-8588 Email: <a href="mailto:ptp@painttoprotect.com">ptp@painttoprotect.com</a>
Product name:	DC 315 Intumescent Coating
Code compliance:	NBC 2015, OBC
Evaluation requirements:	CCMC-TG-099648-15 "CCMC Technical Guide for Intumescent Coatings as a Thermal Barrier over Spray Urethane Insulation"

**In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.**

[Learn more about CCMC recognition](#) [Look for the trusted CCMC mark on products to verify compliance.](#)



National Research  
Council Canada

Conseil national de  
recherches Canada

Canada

## Code compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as thermal barrier of spray polyurethane foam insulation in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

### National Building Code of Canada 2015

Code provision	Solution type
3.1.4.2.(1)(a) Protection of Foamed Plastics	<a href="#">Alternative</a>
3.1.5.15.(2) Except as provided in Sentences 3.1.5.15 ...	<a href="#">Alternative</a>
9.10.17.10.(1)(a) Protection of Foamed Plastics	<a href="#">Alternative</a>
9.25.2.3.(7) Insulation located in areas where it may ...	<a href="#">Alternative</a>
9.29.4. Plastering	<a href="#">Alternative</a>
9.29.5. Gypsum Board Finish (Taped Joints)	<a href="#">Alternative</a>
9.29.5.2. Materials	<a href="#">Alternative</a>
9.29.6. Plywood Finish	<a href="#">Alternative</a>
9.29.7. Hardboard Finish	<a href="#">Alternative</a>
9.29.8. Insulating Fibreboard Finish	<a href="#">Alternative</a>
9.29.9. Particleboard, OSB or Waferboard Finish	<a href="#">Alternative</a>

### Ontario Building Code

Ruling No. 17-04-341 (14036-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2017-03-24 (revised 2018-04-12) pursuant to s.29 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

The above opinion is based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.



# Product information

## Product name

DC 315 Intumescent Coating

## Product description

The product is a proprietary liquid formulation that is delivered in pails and sprayed in the field by licensed installers. The required coating thickness, specifically the wet film thickness (WFT) measured by the manufacturer's certified installer, is specified below based on the performance required to comply with the local building code provisions. The finish coating is white in colour (see [Figure 2](#)) which intumesces (i.e., expands) when heated/exposed to fire and provides the required thermal barrier protection.

## Thermal barrier

The NBC 2015 specifies that foam plastic insulation must be protected from the adjacent space by a thermal barrier. This Report addresses the performance of the product when it is installed as the designated thermal barrier, solely for medium density (MD) spray polyurethane foam insulation as the substrate. The MD spray urethane insulation shall be compliant with CAN/ULC-S705.1-01, "Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material Specification," shall possess a CCMC Listing and shall be installed in compliance with CAN/ULC-S705.2-05, "Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application," following the Report Holder's Site Quality Assurance Program (SQAP).

## Part 9 and part 3 combustible construction

The interior finishes specified in Subsections 9.29.4. to 9.29.9. of Division B of the NBC 2015 are permitted thermal barrier solutions for use in buildings permitted to be of Combustible Construction. In lieu of these interior finishes, the installer/contractor may have this intumescent coating product installed, to protect combustible spray polyurethane insulation only, in order to satisfy code requirements for the protection of foamed plastic insulation specified in Clauses 9.10.17.10.(1)(a) and 3.1.4.2.(1)(a) allowing for the occupancy of a building. An example where this product may be used could include an unfinished basement, garage or attic space.

## Part 3, non-combustible construction

As specified in Sentence 3.1.5.15.(2) of Division B of the NBC, a foamed plastic insulation must be protected from the adjacent space by any of five (5) prescribed acceptable solutions, specifically:

- a. 12.7-mm gypsum board on framing;
- b. plaster and lath mechanically fastened (no thickness given);
- c. masonry (no thickness given);
- d. concrete (no thickness given), or
- e. any thermal barrier that meets Classification B as per CAN/ULC-S124-06, "Test for the Evaluation of Protective Coverings for Foamed Plastic."

Subsequent to original the Part 9 product evaluation, the proponent sought compliance as an alternative solution to the acceptable solutions outlined in Sentence 3.1.5.15.(2) of Division B of the NBC 2015. The equivalency to Part 3 non-

combustible buildings and results are discussed in "[Part 3. non-combustible construction](#)" and outlined in [Alternative solution for part 9 and part 3: summary table](#) whereby this product has demonstrated to provide 'equal or better' performance than the prescribed acceptable solutions in (a) and (e) above.

N.B: This product has not qualified for use in noncombustible buildings, greater than 18m and that are not sprinklered (Sentence 3.1.15.(3))

## Levels of performance

### Part 9 and part 3, combustible construction

As noted in [Provincial and Territorial consultation](#) of this Report, the provinces and territories have been consulted on what would constitute the Code benchmark performance that should be considered from the list of interior finishes outlined in Subsections 9.29.4. to 9.29.9 of Division B of the NBC 2015. The opinions varied based on whether the minimum performance of the interior finish (i.e., 11-mm fibreboard) is appropriate or whether the minimum performance being currently provided in houses as common practice (i.e., 12.7-mm drywall) should be the benchmark. In addition, the provinces and territories provided an opinion as to whether the spray polyurethane in the cavity 'only' should be protected or whether the lumber studs and/or ceiling joists should also be protected. The recommendations are provided in [Provincial and Territorial consultation](#). However, the provincial and territorial regulators acknowledge that the approval rests with the local AHJ. Therefore, the performance levels provided in [Table 1](#) and, whether only the cavity insulation needs to be protected, is for decision-making by the local AHJ in their approval process.

The performance of the intumescent coating as an effective thermal barrier was determined based on the "time-to-flashover" within a full-room fire test. [Thermal barrier performance in fire](#) outlines the test method and time-to-flashover criterion. When the product is to be installed as the designated thermal barrier over MD spray polyurethane, the DC 315 thermal barrier comprises two (2) spray components: a primer and the "DC 315 Intumescent Coating" at a specific thickness based on the target performance being sought by the AHJ (see [Chart for Thickness for Target Performance](#)).

**Table 1. Chart for thickness for target performance**

Performance level in CAN/ULC-9705-13 test <sup>(1)</sup>	Equivalence	Primer thickness <sup>(2)</sup> (wet film thickness [WFT])	DC 315 thickness (WFT)
10 min. to flashover	Interior finishes described in Subsections 9.29.4. through 9.29.9.	3 mil	20 mil
20 min. to flashover	12.7-mm gypsum board	3 mil	20 mil

#### Notes:

- 1 The option of a 10-min or 20-min time-to-flashover is to be decided by the local AHJs to determine the level of performance that is deemed acceptable based on the performance outlined in "[Results of Thermal Barrier Performance Fire Testing – Acceptable and Alternative Solutions](#)", the full-scale room fire test protocol outlined in [Thermal barrier performance in fire](#) and the Provincial/Territorial consultation in [Provincial and Territorial consultation](#).
- 2 Sherwin Williams DTM Bonding Primer.

### Part 3, non-combustible construction

As outlined in [Part 9 and part 3, combustible construction](#) of this Report, a second round of consultation was undertaken with the provinces and territories (P/T) with respect to compliance of the product with any of the five (5) acceptable solutions outlined in Sentence 3.1.5.15.(2) of Division B of the NBC 2015 (see 2.1.2. above). Some P/T members considered compliance with Clause 3.1.5.15.(2)(a) was already achieved by the product (at 24 mil thickness), i.e., it demonstrated equivalency to 12.7 mm gypsum board. However, some questions arose concerning the equivalency in performance to other Part 3 acceptable solutions. The acceptable solutions in Clauses 3.1.5.15.(2)(b) to (d) do not specify an explicit material thickness for comparison. Equivalency testing to the acceptable solution in Clause 3.1.5.15.(2)(e) was considered to determine where this product (at 24 mil thickness) lies with respect to more than one acceptable solution, as was done with the Part 9 acceptable solutions covered in ["Results of Thermal Barrier Performance Fire Testing – Acceptable and Alternative Solutions"](#).

Therefore, in addition to the detailed Part 9 full-scale room testing carried out in accordance with CAN/ULC-9705 and described below for Part 9, a second phase of testing in a full-scale room fire test was undertaken to determine the benchmark performance of the acceptable solution specified in Sentence 3.1.5.15.(2)(e), which pertains to any thermal barrier that meets Classification B as per CAN/ULC-S124. The intent of testing more than one NBC-specified acceptable solution, following the same full-scale room test, is so that a proper comparison can be made to determine equivalency in performance. [Alternative solution for part 9 and part 3: summary table](#) shows a Summary Table ([Summary Table of DC 315 Performance versus Part 9 and Part 3 Acceptable Solutions](#)) outlining the product's equal or better performance as an alternative solution against the listed NBC-prescribed acceptable solutions for both Part 9 and Part 3.

### Installation

The product is applied by installers approved by the manufacturer, International Fireproof Technology Inc. (IFTI), which follows the IFTI field quality assurance program (FQAP) for their site-manufactured thermal barrier.



Figure 1. Example of application where the product may serve as a thermal barrier over MD spray urethane ceiling cavity insulation (and joists) within the ceiling of wood-frame garages. (Photo shows spray foam still to be protected with the DC 315 thermal barrier.)

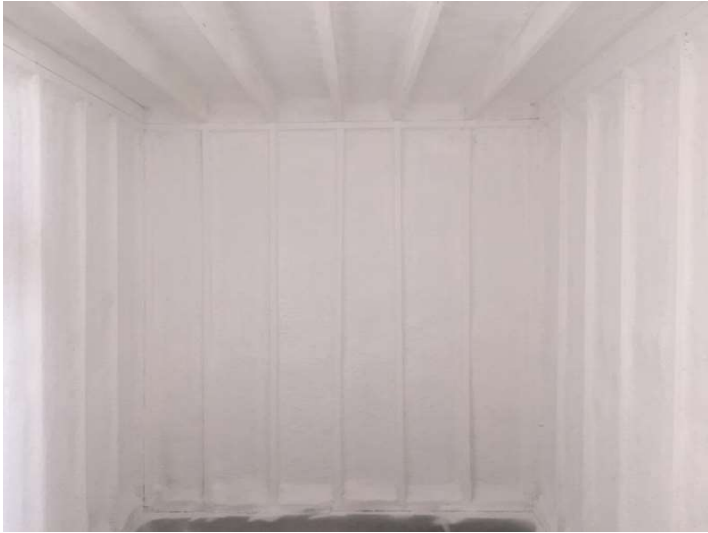


Figure 2. Example of application where the product (white) serves as the thermal barrier over MD spray urethane cavity insulation (and overexposed studs/joists) in wood-frame basement walls and ceiling.

**Note to Figures 1 and 2:** Currently, panel products installed as the designated thermal barrier protect both the foam plastic within the cavity and the wood stud or joist. The protection of the studs is not required by Code. As noted below, some regulators opined that in some cases both the foam plastic and the stud or joist should be protected. In particular, in the case of prefabricated I-joists as supporting floors above the garage, it was considered appropriate to protect the exposed I-joist web and flange as well as the MD spray polyurethane within the joist space.

Manufacturing plants

This evaluation is limited to products produced at the following plants:

Product name	Manufacturing plants	
	Irvine, CA, US	Taoyuan, Republic of China
DC 315 Intumescent Coating	☑	☑

☑ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

## Conditions and limitations

The CCMC's compliance opinion is bound by this product being used in accordance with the conditions and limitations set out below.

- The "DC 315 Intumescent Coating" may serve as a thermal barrier over MD spray polyurethane foam insulation in Part 9 and Part 3 Buildings as outlined below.
- Where the NBC Part 9 interior finishes (Clause 9.10.17.10.(1)(a) of the NBC 2010/2015) will be deemed acceptable by the AHJ, as the performance benchmark for this alternative solution, the DC315 protection which prevents the foamed plastic from reaching flashover in the first 10 min following CAN/ULC-9705 shall be installed.
- For Part 9 or Part 3 buildings permitted to be of combustible construction, where the 12.7-mm gypsum board will be deemed acceptable by the AHJ as the performance benchmark for this alternative solution, the DC315 protection which prevents the foam plastic from reaching flashover in the first 20 min following CAN/ULC-9705 shall be installed.
- For Part 3 buildings required to be on non-combustible construction, where acceptable solutions of 12.7-mm gypsum board (Clause 3.1.5.15.(2)(a)) or Classification B, ULC S124-compliant product (Clause 3.1.5.15.(2)(e)) are deemed acceptable by the AHJ as the performance benchmark for this alternative solution, the DC315 protection which prevents the foam plastic from reaching flashover in the first 20 min following CAN/ULC-9705, shall be installed.
- In New Brunswick, the Fire Prevention Act requires that foamed plastic insulation must be protected by one of the following: a thermal barrier which provides 15 minutes of protection when tested in accordance with ULC s101, 16-mm thick gypsum board, or any other material which the fire marshal approves. Determining equivalent performance of the DC315 to these acceptable solutions was outside the scope of this evaluation.
- When the spray polyurethane is installed as a cavity insulation, the insulation shall be protected and the exposed portion of wall studs or ceiling joists shall also be protected by the DC 315 coating when required by the local AHJ.
- The installation shall be carried out by IFTI-approved installers carrying an IFTI licensing card and following the IFTI field quality control procedures.
- The product must be clearly identified with the phrase "CCMC 14036-R" on the DC 315 container label.



## Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-099648-15	CCMC Technical Guide for Intumescent Coatings as a Thermal Barrier over Spray Urethane Insulation

CCMC's Technical Guide for "Intumescent Coating as a Thermal Barrier over Spray Urethane Insulation" sets out the nature of the technical evidence required by CCMC to enable it to evaluate a product as an alternative solution in compliance with the NBC 2015. The Report Holder has submitted test results and other data for CCMC's evaluation. Testing was conducted at an independent laboratory recognized by CCMC. The corresponding test results for the "DC 315 Intumescent Coating" are summarized below.

## Performance requirements

### Characteristic properties — paint/coatings

Table 2. Results of testing the material properties of the product

Property	Unit	Test method <sup>(1)</sup>	Requirement	Result
Flashpoint (Pensky-Martens closed cup)	°C	As per Section 3.1 of CGSB 1-GP-71 (uses apparatus of ASTM D 93)	Min. 35	> 100°C
Consistency	Kerbs	As per Section 4.5 of CGSB 1-GP-71 (uses apparatus of ASTM D 562)	Min. 85	850 – 1 700
Drying time	-	As per Section 5.1 of CGSB 1-GP-71 or ASTM D 7488	Report value	To recoat: Up to 6 h Dry through: 24 h
Solid content	%	As per Section 2.2 of CGSB 1-GP-71 or ASTM D 2697	Min. 40%	67%
Lead content	ppm	Health Canada Method C02	< 100	Pass <sup>(1)</sup>
Phthalates content	ppm	Health Canada Method C34	< 1%	Pass <sup>(2)</sup>
Volatile organic compound (VOC)	g/l	ASTM D 2369	< 50	47

#### Notes:

- The lead content falls under the *Consumer Product Safety Act*. Testing by ITS has confirmed that the DC 315 is not classified for WHMIS or for *Consumer Chemicals and Containers Regulations* (CCCR), as DC 315 contains no hazardous material in excess of 1%. Chemically, lead is not a component in the DC 315 formulation.
- The phthalates, which are contained in polyvinyl chloride (PVC), fall under the *Consumer Product Safety Act* intended for children's toys and furniture. Per Table Note 1, the DC 315 is not classified under WHMIS or CCCR because the formulation has no hazardous material in excess of 1%. Therefore, phthalates, if present are < 1%.

## Resistance to deterioration - paint/coatings

Table 3. Results of Testing the Material and Environmental Conditioning/Aging of the Product

Property	Test method	Requirement	Result
<b>Flexibility</b>	ASTM D 522	No cracking or peeling on a 12.5-mm mandrel	Pass 9.5 mm (3/8 in.)
<b>Self-lifting</b>	As per Section 132.1 of CGSB 1-GP-71	No blistering, wrinkling, loosening, softening or other defects due to the application of a second similar coat	N/A DC 315 is applied in one coat
<b>Adhesion to substrate at specified thickness (with primer)</b>	ASTM D 3359, Method A	Min. adhesion rating: 4A	5A
<b>Adhesion to substrate – resistance to high humidity</b>	ASTM D 3359, Method A after conditioning	Min. adhesion rating: 4A	5B
<b>Adhesion – pulloff strength</b>	ASTM D 4541	Report value	50 psi
<b>Impact resistance, 7-days dry</b>	ASTM D 2794	Direct: 30 in./lb Indirect: 10 in./lb	(1)
<b>Moisture resistance</b>	ASTM D 4585 Moisture Protocol	No blistering, wrinkling or loss of adhesion (Adhesion ASTM D 3359)	Pass
<b>Fungal/mildew resistance</b>	ASTM C 1338	No more fungal growth than control specimen	Pass (2)
<b>Water vapour permeance (WVP)</b>	ASTM E 96/E 96M-13 (Desiccant Method)	Report value	977 ng/(Pa·s·m <sup>2</sup> )

### Notes:

- 1 The small-scale impact tests are superseded by the full-scale tests in [Table 2](#)
- 2 The fungal testing was conducted at a recognized lab following a similar test method for fungal defacement (ASTM D 5590). No defacement (i.e., no microorganisms) was found after four (4) weeks at 28°C and 90% relative humidity (RH).

## Thermal barrier fire performance — contribution to fire growth (flashover)

See [Thermal barrier performance in fire](#) in this Report for performance-based ISO/CAN/ULC-9705 full-room test to evaluate the time-to-flashover of the thermal barrier.

**Table 4. Results of thermal barrier performance fire testing – acceptable and alternative solutions**

Property	Test method	Result time to flashover (minutes:seconds)
NBC acceptable solutions – benchmark performance		
11.7-mm oriented strand board (OSB)	ISO/CAN/ULC-9705 Full-scale room test	2:15
13-mm oak-veneered plywood/ 13-mm spruce -plywood/11.9 DF plywood		1:18 to 3:03
13-mm particleboard		2:20 to 2:36
Insulating wood fibreboard		0:59
9.5-mm gypsum board		N/A <sup>(1)</sup>
Cementitious ULC-listed Classification B, CAN/ULC-S124 compliant thermal barrier		14:10
Common practice (as-built environment)		
12.5-mm regular gypsum (MD spray urethane cavity insulation and studs also protected)	ISO/CAN/ULC-9705 Full-scale room test	20:00 <sup>(2)</sup>
Alternative solutions		
IFTI – DC 315: Two alternative thermal barrier applications		
3 mil (WFT) primer and 20 mil (WFT) DC 315 – over MD SPUF (no exposed wood studs) <sup>(3)</sup>	ISO/CAN/ULC-9705 Full-scale room test Target 10 minutes <sup>(4)</sup> for equivalency to minimum of NBC-acceptable solutions	11:00
3 mil (WFT) primer and 24 mil (WFT) DC 315 – over MD SPUF (no exposed wood studs) <sup>(3)</sup>	Target 20 minutes <sup>(5)</sup> for equivalency to 12.7-mm regular gypsum	20:00 <sup>(2)</sup>
IFTI – DC 315: Thermal barrier fire testing with mechanical damage to coating		
35 mil WFT with damage/exposed MD SPUF over burner area <sup>(6)</sup>	ISO/CAN/ULC-9705 Full-scale room test	20:00 <sup>(2)</sup>
IFTI – DC 315: Thermal barrier performance over various CAN/ULC-S705.1-compliant MD SPUF <sup>(6)</sup>		
Benchmark SPUF (CCMC-evaluated): 3 mil (WFT) primer and 20 mil (WFT) DC 315	ISO/CAN/ULC-9705 Full-scale room test	10:00
3 mil (WFT) primer and 24 mil (WFT) DC 315		20:00

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Property	Test method	Result time to flashover (minutes:seconds)
9 medium density CAN/ULC-S705.1-compliant foams tested	Full-scale room tests <sup>(7)</sup>	Equivalent performance has been demonstrated for CAN/ULC-S705.1-compliant MD spray urethane insulation.

#### Notes:

- 1 Test data for 9.5-mm gypsum board is not available as it does not represent the minimum performance or common practice solution.
- 2 The full-room test procedure, ULC/ISO 9705 terminates the test at the 20-minute (NFPA 286 terminates at the 15-minute mark) if flashover is not reached as this is the target performance for the 12.7 mm gypsum board as a thermal barrier. In cases where the fire test was not terminated, the time-to-flashover could vary from 22-28 minutes. Both 12.7 mm gypsum board and the DC315 did not reach flashover conditions during the 20 minute exposure to fire.
- 3 The majority of room tests were conducted primarily to compare thermal barrier performance over the foam plastic, without exposed studs, so that direct comparison could be achieved. For AHJs that plan to specify that exposed studs or exposed ceiling joists also be protected by the intumescent coating, as is the case with panel products, then the equivalent thickness (primer and DC 315) shall be sprayed over the exposed stud and/or joist member.
- 4 Where the minimum performance of the NBC interior finishes will be deemed acceptable by the AHJ, it is proposed that protection which prevents the foamed plastic from reaching flashover in the first 10 minutes following CAN/ULC-9705 be accepted. This is viewed as a conservative solution given many of the acceptable thermal barriers would lead to flashover after only 1 to 3 minutes.
- 5 As this performance is equivalent to 12.7 mm, it is proposed that this method of protection which prevents the foamed plastic from reaching flashover during the entire 20-minute CAN/ULC-9705 test method be considered as equivalent to a Class B panel-type thermal barrier when tested in accordance with CAN/ULC-S124.
- 6 Based on existing test data where no primer was used, some MD SPUF became exposed to the flame. Due to the close contact of the intumescent coating to the SPUF insulation, the expansion of the coating controlled the fire spread. In comparison to a panel-type thermal barrier which becomes damaged, in a fire the entire cavity of the foam plastic would contribute to the fire spread.
- 7 The Report Holder has conducted multiple full-scale room tests on the MD SPUF. The analysis of the thermal barrier performance of the nine (9) MD SPUF provides confidence that the specified primer and DC 315 coating thicknesses could be assigned the time-to-flashover for all CCMC-evaluated CAN/ULC-S705.1-compliant MD SPUF.

# Resistance to Mechanical Damage



**Table 5. Results of testing the insulation for resistance to mechanical damage**

Property	Test method	Result
Concentrated load		
	ASTM E 661 <sup>(1)</sup>	
Benchmark (9.5-mm gypsum board)	Full-scale floor panel test procedure Ultimate load applied with a 75-mm (3-in.) disc.	154 lb.
Benchmark (12.7-mm gypsum board)		183 lb.
DC 315 over MD SPUF (18 mil WFT)		376 lb.
DC 315 over MD SPUF (24 mil WFT)		423 lb.
		DC 315 with SPUF > Benchmark
Concentrated load following impact load <sup>(2)</sup>		
	ASTM E 661	
Benchmark (9.5-mm gypsum board)	150 mm impact, 77 lb. proof load	Fracture
Benchmark (12.5-mm gypsum board)	300 mm impact, 92 lb. proof load	Fracture
DC 315 over MD SPUF (18 mil WFT)	450;mm impact, 182 lb. <sup>(3)</sup>	Small chips (12.5 mm diameter)
DC 315 over MD SPUF (24 mil WFT)	450 mm impact, 182 lb. <sup>(3)</sup>	Small chips (5 mm diameter)
		DC 315 with SPUF <sup>(4)</sup> > Benchmark
Falling Ball Impact <sup>(5)</sup>		
	ASTM D 5420	
Benchmark (9.5-mm gypsum board)	30 in.	Cracking at back
	42 in.	Cracking at front
	72 in.	Penetration foam exposed

Property	Test method	Result
<b>Benchmark (12.7-mm gypsum board)</b>	24 in.	Cracking at back
	42 in.	Cracking at front
	78 in.	Penetration foam exposed
<b>DC 315 over MD SPUF (18 mil WFT)</b>	48 in.	Cracking
	> 48 in.	No complete exposure of foam
<b>DC 315 over MD SPUF (24 mil WFT)</b>	48 in.	Cracking
	> 48 in.	No complete exposure of foam
		<b>DC 315 with SPUF <sup>(4)</sup> &gt; Benchmark</b>

#### Notes:

- 1 The ASTM E 661 test protocol is a large-scale impact and load test procedure for floor panels. This protocol was used to evaluate the equivalency to gypsum board as the minimum Code-specified mechanical damage protection (i.e., 9.5 mm) and thicker (i.e., 12.7 mm) for the AHJs seeking a higher protection level.
- 2 Ultimate load applied following increased impact loading (30 lb. bag at increasing height). A measure of toughness or strength retention after successive impact energy.
- 3 The same failure load as that applied to 12.5-mm gypsum board was used to evaluate equivalent or better performance.
- 4 The full-room fire test was conducted with damaged DC 315. The exposed foam was protected by the expanding intumescent coating (see [Table 4](#), Note 6.)
- 5 A 62.5-mm diameter steel ball is dropped at increasing heights in 150 mm intervals.

## Additional performance data requested by the report holder

Data in this section does not form part of CCMC's [Code compliance opinion](#) section.

- Flame-spread rating as per ULC S102: over MD SPUF = 25, over cement board = 0.
- DC 315 meets regulations related to contact with food (i.e., potato sheds, etc.)

## Additional health and safety data identified by third parties

A provincial and territorial consultation was conducted to determine the expected scenarios for minimum benchmark performance for both thermal barriers over MD SPUF and minimum mechanical protection of insulation. The consultation findings are outlined in [Provincial and Territorial consultation](#) and are intended to provide the necessary technical information for decision making by the local AHJ.

## Thermal barrier performance in fire

For combustible construction, the NBC 2015 requires foamed plastic insulation that forms part of a wall or ceiling assembly be protected from adjacent spaces other than concealed spaces in attic or roof spaces, crawl spaces and wall assemblies. The intent of this requirement is to limit the probability that foamed plastic insulation will become exposed to a fire or subjected to high temperatures, which could lead to its ignition and contribution to early fire growth and spread and could in turn negatively affect the ability of persons to escape from a fire and cause them harm. The role of the thermal barrier is to retard the contribution of the foam plastic insulation to the fire growth to allow for occupants to evacuate before flashover. The benchmark time-to-flashover is based on the current known performing thermal barriers providing acceptable performance (i.e., acceptable solution).

The CAN/ULC-S124 is a test procedure with a pass or fail assigned, which is prescriptive, with respect to the temperature rise behind the designated thermal barrier. The prescriptive criterion of temperature rise is based on measurements of traditional panel products. However, an intumescent coating requires initial heating before it intumesces. During this initial period, the temperature rises at the interface between the intumescent coating and the foam plastic and may exceed those specified in CAN/ULC-S124 for Classification B.

A more complete assessment of a fire situation is through a performance-based approach as with full-scale room tests. A performance-based full-room test method, CAN/ULC- 9705, which is similar to NFPA 286, was recently promulgated in Canada. Although this test method is similar to the NFPA test method, CAN/ULC- 9705 is considered more severe and, as such, there are differences that make it impossible to directly compare test results. In particular, the ignition source and its heat output prescribed in the Canadian test method are different than in the NFPA 286 test method.

In this evaluation, tests are conducted in conformance with the CAN/ULC- 9705 test method to determine the potential effect of a MD spray polyurethane foam protected using an intumescent coating on the fire growth and fire characteristics. The criterion used in these full-room tests is the 'time-to-flashover.' Flashover is the near-simultaneous ignition of most of the directly exposed combustible material in an enclosed area. The time-to-flashover indicates the time at which fire will spread to other objects in the room remote from the ignition source. In standard room tests such as CAN/ULC-9705, the time at which flashover occurs is determined by the earliest time at which two of the following criteria occur:

1. Heat release rate including burner  $\geq 1$  MW.
2. Incident heat flux at the floor  $\geq 20$  kW/m<sup>2</sup>.
3. Flames through doorway.
4. Crumpled paper on floor ignites.
5. Average temperature at ceiling in the room exceeds 600°C.

In addition, similar testing must be undertaken for benchmarking of the NBC-specified acceptable solutions or the acceptable solutions specified by the provincial and territorial regulators. Based on the provincial and territorial consultation, the proponent in consultation with the CCMC evaluation officer determined the tests and criteria to be met for the decision making by the local AHJs across Canada.

## Provincial and Territorial consultation

### B1 Background

The consultation of the provinces and territories was conducted from October 2015 to January 2016. Discussions were done on the SPUF applications for single-family house basements and attached garages.

Other applications within Part 9, Buildings could be permitted and other Code provisions may apply (i.e., fire-resistance rating of assembly).

Tables B1, B2 and B3 show compiled responses for benchmark thermal barrier protection based on: (i) the Code minimum (whether it reflects current practice or not); (ii) the current practice and continued performance based on current practice; or (iii) a combination of both.

### B2 Proponent Decision Making – Rationalizing Benchmarks

Based on this survey, the proponent has sought to demonstrate equal or better performance of one or more of the jurisdictions by qualifying to the different benchmark levels.

IFTI has sought to qualify their DC 315 product to a benchmark that would capture as many jurisdictions' benchmark performances as possible. The benchmark acceptable solution is 12.7-mm (1/2 in.) gypsum wallboard, which covers all jurisdictions except for: (i) New Brunswick (NB), which requires a higher level of performance for foam plastic; and (ii) Alberta (AB), for attached garage applications whereby they specify explicit Code requirements for a 12.7-mm (1/2 in.) gypsum board as an interior finish, beyond the thermal barrier performance requirement.

**Table 6. B1. Thermal Barrier Protection of Basement SPUF Applications**

Province or Territory <sup>(1)</sup>	Thermal Barrier Benchmark for Basements	Intumescent Coating to Cover/Protect SPUF Cavity Insulation Only	Intumescent Coating to Cover/Protect SPUF Cavity Insulation and Stud Framing
Nunavut (NU), British Columbia (BC), Nova Scotia (NS), Northwest Territories (NWT), Manitoba (MB), Alberta (AB)	Fibreboard – 11.1 mm (7/16 in.)	NU, BC, NWT, MB, AB	NS
Yukon Territory (YT), Saskatchewan (SK) Ontario(ON)	Drywall – 12.7 mm (1/2 in.)	ON	YT, SK <sup>(2)</sup>
Québec (QC)	Drywall – 9.5 mm (3/8 in.)	QC	-
New Brunswick (NB)	Drywall – 15.9 mm (5/8 in.) or 15 min/ S101 thermal barrier	NB	-

#### Notes:

- <sup>1</sup> The province or territory that is not covered here is expected to base their decision-making on one of the solutions covered within this matrix.

- 2 The basement studs need to be protected by the intumescent coating only if the basement studs are loadbearing (e.g., permanent wood foundations (PWFs)).

**Table 7. B2. Thermal Barrier Protection of Attached Garage SPUF Applications**

Province or Territory <sup>(1)</sup>	Thermal Barrier Benchmark for Attached Garages	Intumescent Coating to Cover/Protect SPUF Cavity Insulation Only	Intumescent Coating to Cover/Protect SPUF Cavity Insulation and Studs and Ceiling Joists
NU, BC, NS, NWT, MB	Fibreboard – 11.1 mm (7/16 in.)	NU, BC, NWT, MB	NS
YT, SK, ON	Drywall – 12.7 mm (1/2 in.)	ON	YT, SK <sup>(2)</sup>
QC	Drywall – 9.5 mm (3/8 in.)	QC	-
NB	Drywall – 15.8 mm (5/8 in.) or 15 min/S101 thermal barrier	NB	-
AB	Interior finish mandated – 12.7 mm (1/2 in.) gypsum or 15 min/S101	-	Interior finish over studs, joists, trusses, etc

**Notes:**

- 1 The province or territory not covered here is expected to base their decision-making on one of the solutions covered within this matrix.
- 2 The garage ceiling/floor joists need to be protected by the intumescent coating only if the joists are loadbearing and of engineered wood (e.g., I-joists). Solid-sawn lumber joists do not need to be protected. Loadbearing studs are to be protected.

**Table 8. B3. Protection of Insulation from Mechanical Damage (When Protection Required)**

Province or Territory <sup>(1)</sup>	Mechanical Damage Protection for Insulation – Benchmark	Attached Garages	Basement Areas
AB, YT, NU, BC, MB, ON	Any Code-specified panel – gypsum board, plywood/OSB, hardboard, particleboard	YT, NU, BC, MB, ON	AB, YT, NU, BC, MB, ON
YT, SK, AB	Drywall – 12.7 mm (1/2 in.)	AB, SK	SK
NWT, QC	Drywall – 9.5 mm (3/8 in.)	NWT, QC	NWT, QC
NB	Code-specified panels	NB	NB

**Notes:**



- 1 Any province or territory that is not covered here is expected to base their decision-making on one of the solutions covered within this matrix.

## Alternative solution for part 9 and part 3: summary table

**Table 9. C1. Summary Table of DC 315 Performance versus Part 9 and Part 3 Acceptable Solutions**

NBC Part 9			
NBC-Specified Thermal Barrier	Test Method	Result Time to Flashover (minutes:seconds)	
Acceptable Solutions			Alternative Solution
Interior finishes in Subsections 9.29.4 to 9.29.9	ISO/CAN/ULC9705 Full-scale room test	1:00-3:00 (N.B. CCMC-specified 10 minute minimum to be met)	20 mil DC 315 w/3 mil primer 11:00 minutes <sup>(1)</sup>
Common Practice (As-Built Environment)			24 mil DC 315 w/3 mil primer
12.7-mm regular gypsum <sup>(3)</sup>	ISO/CAN/ULC9705 Full-scale room test	20:00	20:00 minutes <sup>(2)</sup>
NBC Part 3			
Acceptable Solutions Sentence 3.1.5.15.(2)			Alternative Solution
Clause 3.1.5.15.(2)(a) <sup>(1)</sup>	ISO/CAN/ULC9705 Full-scale room test	20:00	24 mil DC315 w/3 mil primer 20:00 minutes <sup>(3)</sup>
Clause 3.1.5.15.(2)(e) <sup>(4)</sup>		14:10	

**Notes:**

- 1 Intumescent coating, 20 mils over 100 mm of CCMC-listed CAN/ULC-S705.1-compliant spray urethane foam insulation. Passed requirement to meet minimum 10-min specified by CCMC.
- 2 Intumescent coating, 24 mils over 100 mm of CCMC-listed CAN/ULC-S705.1-compliant spray urethane foam insulation. Passed requirement of equal or better performance than acceptable solution.
- 3 12.7-mm regular gypsum on framing and MD spray urethane cavity insulation.
- 4 Cementitious thermal barrier conforming to ULC-listed Classification B, CAN/ULC-S124-compliant thermal barrier was tested over 100 mm CCMC-listed CAN/ULC-S705.1-compliant MD spray polyurethane foam insulation. DC315 passed requirement of equal or better performance than acceptable solution.

# Administrative information

## Disclaimer

This evaluation is issued by the Canadian Construction Materials Centre (CCMC), a part of the Construction Research Centre at the National Research Council of Canada (NRC). The evaluation must be read in the context of the entire [CCMC Registry of Product Assessments](#) and the legislated applicable building code in effect.

The CCMC was established in 1988 on behalf of the applicable regulator (i.e., the provinces and territories) to ensure—through assessment—conformity of alternative and acceptable solutions to regional building codes as determined by the local authority having jurisdiction (AHJ) as part of the issuance of a building permit.

It is the responsibility of the local AHJs, design professionals, and specifiers to confirm that the evaluation is current and has not been withdrawn or superseded by a later issue. Please refer to [the website](#) or contact:

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





**This PDF is an alternative version.** This document was published on 2022-12-05 and may not be the latest version of this evaluation. Users should consult the latest [published assessment](#) on the [CCMC Registry of Product Assessments](#), which contains the most up to date information. This PDF is intended for use as a record, not the latest information available.

## CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

### CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)	 ( <a href="#">Alliance of Canadian Building Official Associations (ACBOA)</a> )
First Nations National Building Officers Association (FNNBOA)	 ( <a href="#">First Nations National Building Officers Association (FNNBOA)</a> )
Canadian Home Builders' Association (CHBA)	 ( <a href="#">Canadian Home Builders' Association (CHBA)</a> )
Alberta Building Officials Association (ABOA)	 ( <a href="#">Alberta Building Officials Associations (ABOA)</a> )
Saskatchewan Building Officials Association (SBOA)	 ( <a href="#">Saskatchewan Building Officials Association (SBOA)</a> )
Manitoba Building Officials Association (MBOA)	 ( <a href="#">Manitoba Building Officials Association (MBOA)</a> )
Ontario Building Officials Association (OBOA)	 ( <a href="#">Ontario Building Officials Association (OBOA)</a> )
New Brunswick Building Officials Association (NBBOA)	 ( <a href="#">New Brunswick Building Officials Association (NBBOA)</a> )
Nova Scotia Building Officials Association (NSBOA)	 ( <a href="#">Nova Scotia Building Officials Association (NSBOA)</a> )

The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. [Learn more about how the CCMC provides a unique service for Canada.](#)

For more information, contact the CCMC by phone at (613) 993-6189 or by email at [ccmc@nrc-cnrc.gc.ca](mailto:ccmc@nrc-cnrc.gc.ca)

## Code compliance as an acceptable solution

### Code Compliance via Acceptable Solutions

If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

### CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

# Code compliance as an alternative solution

## Code Compliance via Alternative Solutions

Where a design differs from the acceptable solutions in Division B, then it should be treated as an **"alternative solution."** A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

### CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.



# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20190422-R39793  
**Report Reference** R39793-20190419  
**Issue Date** 2019-APRIL-22

**Issued to:** INTERNATIONAL FIREPROOF TECHNOLOGY INC  
17528 VON KARMAN AVE  
IRVINE CA 92614-6208

**This certificate confirms that  
representative samples of**

FIRE AND SMOKE PROTECTION FOR CANADA  
Spray-applied, protective coating for spray polyurethane  
foam insulation designated "DC 315 Intumescent Coating".

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:**

CAN/ULC-S145, STANDARD METHOD OF TEST FOR  
THE EVALUATION OF PROTECTIVE COVERINGS FOR  
FOAMED PLASTIC INSULATION - FULL-SCALE ROOM  
TEST.

**Additional Information:**

See the UL Online Certifications Directory at  
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program  
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



# ULC Evaluation Report

**ULC ER39793-01-REV20200305**

Issued: 2019-04-19

Revised: 2019-07-12, 2020-03-05

Visit ULC's On-Line Certifications Directory:

<https://iq.ulprospector.com/en/> for current status of Report.

UL Category Code: ULFE7

CSI MasterFormat®

**DIVISION: 07 00 00 THERMAL AND MOISTURE PROTECTION**

**Sub-level 2: 07 80 00 – Fire and Smoke Protection**

**Sub-level 3: 07 81 00 – Applied Fireproofing**

**Sub-level 4: 07 81 23 – Intumescent Fireproofing**

## **COMPANY:**

**INTERNATIONAL FIREPROOF TECHNOLOGY INC  
17528 VON KARMAN AVE  
IRVINE, CA 92614-6208  
United States**

## **1. SUBJECT**

DC 315 Intumescent Coating

## **2. SCOPE OF EVALUATION**

- Compliance with CAN/ULC-S145:2018, Standard Method of Test for the Evaluation of Protective Coverings for Foamed Plastic Insulation - Full-Scale Room Test, First Edition (dated June 2018), section 7.2.
- Compliance with the following Articles of the National Building Code of Canada 2010:
  - Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
    - Clause 3.1.4.2.(1), Protection of Foamed Plastics
    - Sentence 3.1.5.12.(2), Combustible Insulation and its Protection



## 2. SCOPE OF EVALUATION (continued)

- Compliance with the following Articles of the National Building Code of Canada 2015:
  - Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
    - Clause 3.1.4.2.(1), Protection of Foamed Plastics
    - Sentence 3.1.5.15.(2), Foamed Plastic Insulation

## 3. USES

The product is a spray-applied, protective coating for spray polyurethane foam insulation.

## 4. PRODUCT DESCRIPTION

### 4.1 General:

The product is a white, ice gray, dark gray, or charcoal black liquid coating that is spray applied by authorized installers to spray polyurethane foam insulation. The coating intumesces upon exposure to fire to insulate and protect the polyurethane foam insulation from fire.

The coating system consists of two components:

- “Sherwin Williams DTM Bonding Primer”, and
- “DC 315 Intumescent Coating”

The components are installed separately and are not mixed.

“DC 315 Intumescent Coating” shall be labelled “ULC ER39793-01”.

## 5. INSTALLATION

The spray polyurethane foam shall be applied in accordance with the current edition of CAN/ULC-S705.2.

The coating and primer system shall be applied to spray polyurethane foam insulation when fully cured. Refer to the spray polyurethane foam insulation manufacturer’s documentation for foam cure time.

Prior to application of “DC 315 Intumescent Coating”, the foam surface is required to be primed with “Sherwin Williams DTM Bonding Primer”. The primer shall be allowed to cure for a minimum of one hour prior to application of “DC 315 Intumescent Coating”. “DC 315 Intumescent Coating” shall be allowed to cure for a minimum of 72 hours in order to achieve the appropriate classification.

The minimum wet film thicknesses (measured at the time of application) required for both the primer and the coating are given in Table 6.1.

## 6. CONDITIONS OF USE

The determination of the required Classification of 10 min. or Classification 20 min. is to be determined by the authority having jurisdiction.

### 6.1 General:

**Table 6.1 Foam and Coating Application Thicknesses**

	Classification of 10 min	Classification of 20 min
Spray Polyurethane Foam	50 mm 38.4 kg/m <sup>3</sup>	100 mm 38.4 kg/m <sup>3</sup>
Primer Wet Film Thickness	0.076 mm (3 mil)	0.076 mm (3 mil)
DC 315 Wet Film Thickness	0.508 mm (20 mil)	0.640 mm (24 mil)

**Table 6.2 CAN/ULC-S102 Surface burning Characteristics of DC 315**

	Flame Spread Rating	Smoke Developed Classification
Intumescent Coating "DC 315", applied to 9.5 mm thick OSB at 0.3 mm wet film thickness	0	25

## 7. SUPPORTING EVIDENCE

International Fireproof Technology Inc has submitted technical documentation for ULC's review. In addition to the National Research Council of Canada testing laboratories, testing was conducted at laboratories recognized as ISO 17025 compliant. The test data submitted for this product is summarized below.

### 7.1 Performance Requirements and Test Results

**Table 7.1 Test Results of DC 315**

	Classification of 10 min		Classification of 20 min	
	Requirement	Test Result	Requirement	Test Result
Floor level heat flux	≤ 20 kW/m <sup>2</sup>	< 2 kW/m <sup>2</sup>	≤ 20 kW/m <sup>2</sup>	9 kW/m <sup>2</sup>
Average upper layer temperature	≤ 600°C	< 600°C	≤ 600°C	450°C
Heat release rate	≤ 1MW	< 0.2 MW	≤ 1MW	< 0.45 MW
Visible flames exit doorway	No	No	No	No
Total Smoke Released	≤ 675 m <sup>2</sup>	< 300 m <sup>2</sup>	≤ 1350 m <sup>2</sup>	< 800 m <sup>2</sup>

**Table 7.2 Test Results of 12.5 mm Regular Gypsum Wallboard<sup>a</sup>**

	Classification of 10 min		Classification of 20 min	
	Requirement	Test Result	Requirement	Test Result
Floor level heat flux	$\leq 20 \text{ kW/m}^2$	$< 2 \text{ kW/m}^2$	$\leq 20 \text{ kW/m}^2$	$< 8 \text{ kW/m}^2$
Average upper layer temperature	$\leq 600^\circ\text{C}$	--	$\leq 600^\circ\text{C}$	--
Heat release rate	$\leq 1\text{MW}$	$< 0.2 \text{ MW}$	$\leq 1\text{MW}$	$< 0.6 \text{ MW}$
Visible flames exit doorway	No	No	No	No
Total Smoke Released	$\leq 675 \text{ m}^2$	$< 54 \text{ m}^2$	$\leq 1350 \text{ m}^2$	$54 \text{ m}^2$

<sup>a</sup>Gypsum wallboard installed as protection over nominally 50 mm thick spray polyurethane foam with a density of 33.6 kg/m<sup>3</sup>.

**Table 7.3 Test Results of DC 315 for Paint Performance Requirements**

Property	Test Method	Requirement	Result
Flashpoint (Pensky-Martens closed cup) [ $^\circ\text{C}$ ]	Section 3.1 of CGSB 1-GP-71	$> 35$	$> 100$
Consistency [Kerbs]	Section 4.5 of CGSB 1-GP-71	$> 85$	850-1700
Drying time [hours]	Section 5.1 of CGSB 1-GP-71 or ASTM D 7488	Report value	To reapply: 6h min. Full cure: 24 h min.
Solid content [%]	Section 2.2 of CGSB 1-GP-71 or ASTM D 2697	$> 40\%$	67%
Lead content [ppm]	Health Canada Method C02	$< 100$	Pass
Phthalates content [%]	Health Canada Method C34	$< 1$	Pass
Volatile organic compound (VOC) [g/l]	ASTM D 2369	$< 50$	47

**Table 7.4 Test Results of DC 315 for Environmental Durability Requirements**

Property	Test Method	Requirement	Result
Flexibility	ASTM D 522	No cracking or peeling on a 12.5-mm mandrel	Pass
Adhesion to substrate (with primer)	ASTM D 3359, Method A	Min. adhesion rating: 4A	5A
Adhesion to substrate (with primer) under high humidity	ASTM D 3359, Method A after conditioning	Min. adhesion rating: 4A	5B
Adhesion – pull off strength	ASTM D 4541	Report value	344.8 kPa
Moisture resistance	ASTM D 4585 Moisture Protocol	No blistering, wrinkling or loss of adhesion (Adhesion ASTM D 3359)	Pass
Fungal/mildew resistance	ASTM D 5590	No more fungal growth than control specimen	Pass
Water Vapor permeance	ASTM E 96/E 96M-13 (Desiccant Method)	Report value	977 ng/(Pa·s·m <sup>2</sup> )

## 8. BUILDING CODE COMPLIANCE

The use of foamed plastics in combustible and non-combustible construction poses a significant fire risk. To mitigate this risk, Clauses 3.1.4.2.(1) and 3.1.5.12.(2) of the 2010 National Building Code of Canada and Clauses 3.1.4.2.(1) and 3.1.5.15.(2) of the 2015 National Building Code of Canada require the foamed plastic to be protected by a thermal barrier. Depending on the location of installation, thermal barrier can be defined as mechanically fastened 12.7 mm thick gypsum wallboard or any thermal barrier that meets the requirements of classification B when tested in accordance with CAN/ULC-S124.

The test method described in CAN/ULC-S124, utilizes the time-temperature fire exposure required for fire resistance testing in CAN/ULC-S101. It limits the interface temperature between the foamed plastic insulation and the protective material to predetermined values traditionally used as indicators of the prevention of ignition of combustible material based on duration and maximum temperature rise. It evaluates the thermal protection provided to the foamed plastic insulation. The test method's temperature failure criteria are intended to demonstrate that performance of a thermal barrier will limit the contribution of the foam plastic insulation to fire growth, by limiting the temperature rise at the interface between the protection and the foamed plastic insulation to a level at which the foamed plastic insulation is not likely to contribute to an ambient fire.

The test method in CAN/ULC-S145, is also a performance-based approach to evaluating, and limiting, the contribution of foamed plastic insulation together with the method of protection, to fire growth. This test method monitors floor head flux, room temperature, overall heat release rate, and the visual appearance of flames exiting the doorway to determine the contribution to flashover by the foam system and protective covering. The fire performance characteristics are similar to those found in CAN/ULC-9705.

Although the method is fundamentally different from CAN/ULC-S124, both test methods can provide safe solutions to ensuring the foamed plastic insulation does not contribute to early fire growth.

The CAN/ULC-S145 test data provided demonstrate that "DC 315 Intumescent Coating" applied to spray polyurethane foam does not contribute to flashover within the 20 minute test period, comparable to the performance of 12.5 mm gypsum wallboard, and can be used to satisfy Sections 3.1.4.2.(1) and 3.1.5.12.(2) of the 2010 National Building Code of Canada and Sections 3.1.4.2.(1) and 3.1.5.15.(2) of the 2015 National Building Code of Canada.

## 9. IDENTIFICATION

The “DC 315 Intumescent Coating” described in this evaluation report are identified by a marking bearing the report holder’s name (International Fireproof Technology Inc), the plant identification, and the evaluation report number ULC ER39793-01. The validity of the evaluation report is contingent upon this identification appearing on the product.

### 9.1 Manufacturing Locations:

International Fireproof Technology Inc  
17528 Von Karman Ave.  
Irvine, CA 92614  
United States

International Carbide Technology  
No. 1-17, Toa-Chan, 12 Ling  
Lu-Chu Hsiang  
Kern-Ko Village  
Taiwan, Republic of China

## 10. USE OF ULC EVALUATION REPORT

**10.1** The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.

**10.2** ULC Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.

**10.3** The current status of this report, as well as a complete directory of ULC Evaluation Reports may be found at UL.com via our On-Line Certifications Directory:

<https://iq.ulprospector.com/en/>



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## ICC-ES Listing Report

### ESL-1577

Issued April 2024

This listing is subject to renewal April 2025.

**CSI:** DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION  
Section: 07 81 23—Intumescent Fireproofing

DIVISION: 09 00 00—FINISHES  
Section: 09.96.43—Fire-Retardant Coatings

DIVISION: 09 00 00—FINISHES  
Section: 09.96.46—Intumescent Painting

#### Product Certification System:

The ICC-ES product-certification system includes evaluating reports of tests of standard manufactured product, prepared by accredited testing laboratories, provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.

**Product:** DC315 INTUMESCENT COATING

**Listee:** INTERNATIONAL FIREPROOF TECHNOLOGY INC.

**Evaluation:** DC315 intumescent coating was evaluated based on tested non-loadbearing wall assemblies consisting of building-material components described in each ICC Design No., tested in accordance with the following standard:

- CAN/ULC-S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials, ULC Standards.

**Findings:** Evaluation of DC315 intumescent coating as a component of the fire-resistance rated wall assembly described in each ICC Design No. is based on testing in accordance with the applicable test standard and code exceptions for exterior walls as permitted in the applicable sections of the following code editions:

- *National Building Code of Canada*® 2020 and 2015  
Applicable Sections: Volume 1-Division B: 3.1.7.1. and 3.1.7.2.

#### Identification:

1. The ICC-ES mark of conformity, electronic labeling, or the listing report number (ICC-ES [ESL-1577](#)) and/or the ICC-ES evaluation report number ([ESR-3702](#)), and when applicable, the ICC-ES listing mark, along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
2. All containers of DC315 intumescent coating must be labeled with the manufacturer's name (International Fireproof Technology Inc.) and address; the product name; the date of manufacture or expiration date; and the manufacturer's instructions for application.
3. The report holder's contact information is the following:

**INTERNATIONAL FIREPROOF TECHNOLOGY INC.**  
**17528 VON KARMAN AVENUE**  
**IRVINE, CALIFORNIA 92614**  
**(949) 975-8588**  
[ptp@painttoprotect.com](mailto:ptp@painttoprotect.com)

**Installation:** The product must be installed in accordance with International Fireproof Technology Inc.'s published installation instructions, in compliance with the associated design listing and with all applicable codes.

**Conditions of Listing:**

1. The listing report addresses only conformance with the standards and code sections noted above.
2. Approval of the product's use is the sole responsibility of the local code official.
3. The listing applies only to the materials tested and as submitted for review by ICC-ES.
4. The Assembly Ratings reported in each ICC Design No. are based on Sections 3.1.7.1. and 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015. The Exception for Exterior Walls is in accordance with Sentence 3.1.7.2.(1), where the limit on the rise of temperature on the unexposed surface of an assembly as required by the tests referred in Sentence 3.1.7.1.(1) shall not apply to an exterior wall that has a limiting distance of 1.2 m (3.94 ft) or more, provided correction is made for radiation from the unexposed surface in accordance with Sentence 3.2.3.1.(9) of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015. Where applicable, each ICC Design No. references the respective equivalent opening factors ( $F_{EO}$ ) derived from Sentence 3.2.3.1.(9) of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015 to be used in the calculation of the corrected area of unprotected openings including actual and equivalent openings ( $A_c$ ) based on the Assembly Rating. Calculation of  $A_c$  is the sole responsibility of the end user and outside of the scope of this listing.
5. International Fireproof Technology Inc.'s DC315 intumescent coating is manufactured under a quality control program with inspections by ICC-ES.

# ICC Design No. IFRM-1577-01

**ESL-1577**

Issued April 2024

This listing is subject to renewal April 2025.

[www.icc-es.org](http://www.icc-es.org) | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**Applicant:** INTERNATIONAL FIREPROOF TECHNOLOGY INC.

**Product:** DC315 INTUMESCENT COATING

**Code**

**Section:** Sections 3.1.7.1. and 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015

**Assembly**

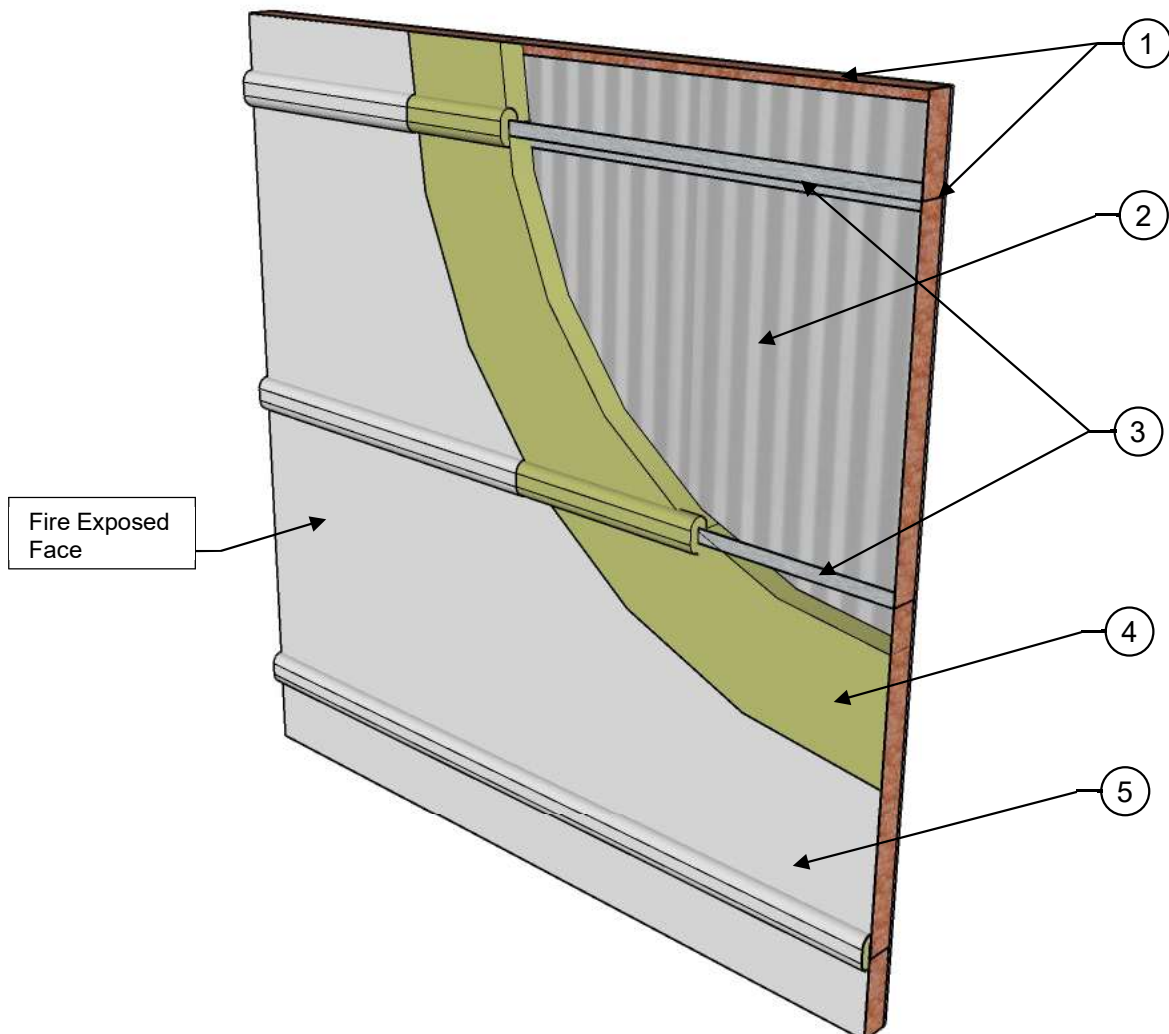
**Rating:** 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) where  $F_{EO} = 0.019$ ,

1-Hour from the Fire Exposed Face (Asymmetrical Wall Assembly) where  $F_{EO} = 0.034$ ,

Note: See Conditions of Listing Item 4 of [ESL-1577](#)

**Load:** Non-loadbearing

IFRM = Intumescent Fire-Resistive Materials



**COMPONENTS OF CONSTRUCTION:**

1. **Perimeter Framing Members** – Minimum 16-gauge thick steel members with minimum 101.6 mm by 50.8 mm (4-inch by 2-inch) legs are used as perimeter framing for the wall assembly. The perimeter framing members are oriented to allow for wall sheathing attachment and secured to each other using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each corner.
2. **Wall Sheathing (Unexposed Face)** – Minimum 26-gauge thick and 914.4 mm (36-inch) wide commercial grade steel R-panels with 31.8 mm (1 1/4-inch) deep ribs must be installed vertically with panel seams overlapping in accordance with the manufacturer's published installation instructions. Panels must be secured to each other along the vertical overlapping seam using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center vertically. Panels are secured to the perimeter framing members using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center around the perimeter of the wall assembly. Panels must be secured to the intermediate support framing using 38.1 mm (1 1/2-inch) long No. 12-14 external hex washer head self-drilling screws spaced at a maximum of 304.8 mm (12-inches) on center horizontally along each intermediate support framing member.
3. **Intermediate Support Framing** – Intermediate wall framing members consist of minimum 16-gauge thick, 101.6 mm (4-inch) deep Z- or C-girts with 50.8 mm (2-inch) legs installed horizontally and spaced at a maximum of 1219.2 mm (48-inches) on center. The intermediate support framing members are secured to the perimeter framing members using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each end.
4. **Insulation** – GENYK Boreal Nature Elite (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 32.04 kg/m<sup>3</sup> (2.0 lbs./ft<sup>3</sup>), must be applied at a nominal thickness of 101.6 mm (4-inches) between the intermediate support framing members, applied directly to the fire exposed face of the wall sheathing. SPF insulation must also be applied to the intermediate support framing members at a nominal thickness of 38.1 mm (1 1/2-inch) matching the contour of the Z- or C-girts. Application must be in accordance with the manufacturer's published instructions.
5. **Intumescent Coating (Exposed Face)** – International Fireproof Technology Inc. DC315 intumescent coating must be applied over the exposed surface of the spray foam insulation at a minimum 0.61 mm (24 mils) dry film thickness (DFT) on the fire exposed face of the wall assembly. Application must be in accordance with the manufacturer's published instructions.

## ICC Design No. IFRM-1577-02

**ESL-1577**

Issued April 2024

This listing is subject to renewal April 2025.

[www.icc-es.org](http://www.icc-es.org) | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**Applicant:** INTERNATIONAL FIREPROOF TECHNOLOGY INC.

**Product:** DC315 INTUMESCENT COATING

**Code Section:** Sections 3.1.7.1. and 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015

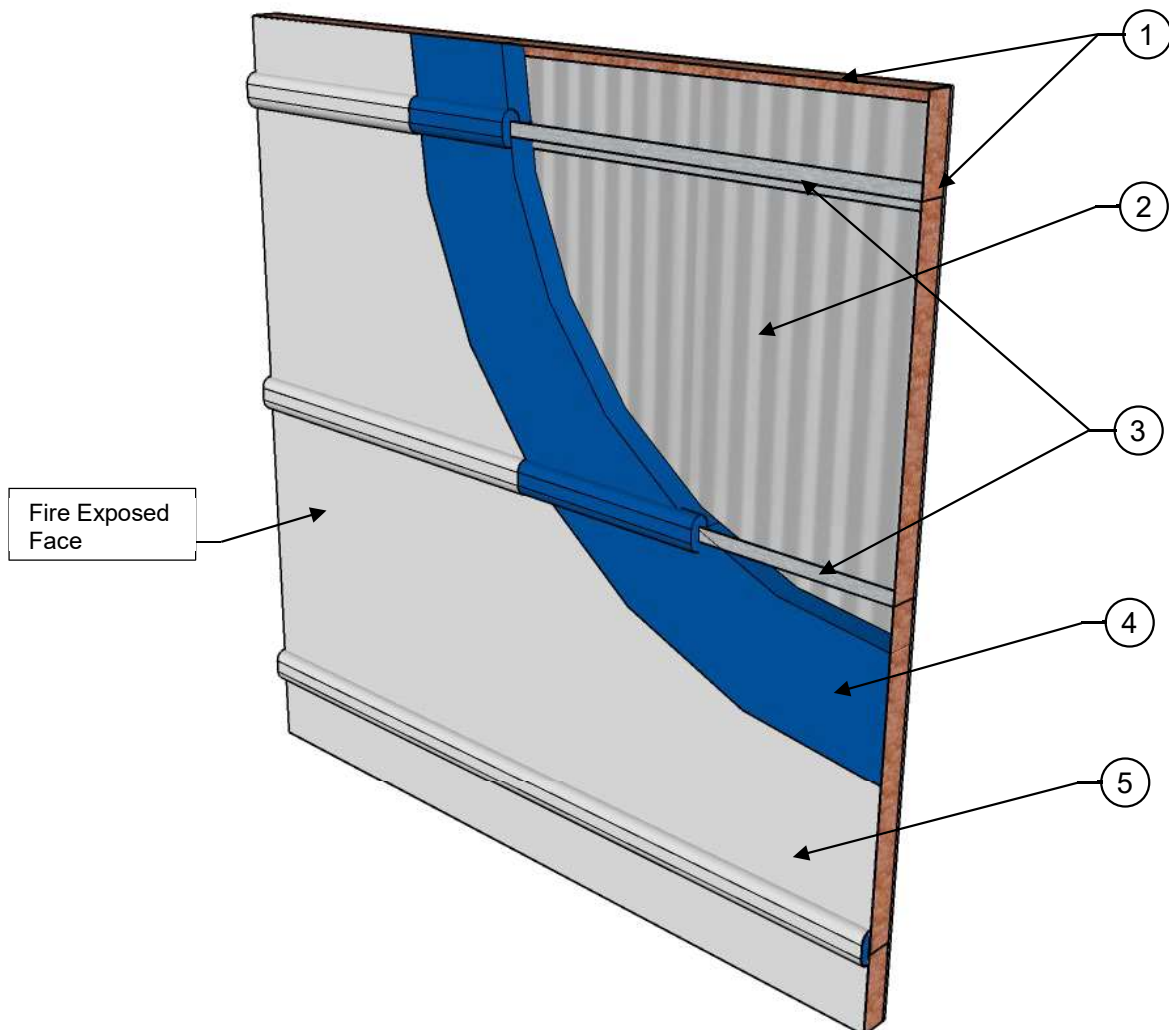
**Assembly Rating:** 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015,

1-Hour from the Fire Exposed Face (Asymmetrical Wall Assembly) where  $F_{EO} = 0.016$ ,

Note: See Conditions of Listing Item 4 of [ESL-1577](#)

**Load:** Non-loadbearing

IFRM = Intumescent Fire-Resistive Materials



**COMPONENTS OF CONSTRUCTION:**

1. **Perimeter Framing Members** – Minimum 16-gauge thick steel members with minimum 101.6 mm by 50.8 mm (4-inch by 2-inch) legs are used as perimeter framing for the wall assembly. The perimeter framing members are oriented to allow for wall sheathing attachment and secured to each other using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each corner.
2. **Wall Sheathing (Unexposed Face)** – Minimum 26-gauge thick and 914.4 mm (36-inch) wide commercial grade steel R-panels with 31.8 mm (1 1/4-inch) deep ribs must be installed vertically with panel seams overlapping in accordance with the manufacturer's published installation instructions. Panels must be secured to each other along the vertical overlapping seam using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center vertically. Panels are secured to the perimeter framing members using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center around the perimeter of the wall assembly. Panels must be secured to the intermediate support framing using 38.1 mm (1 1/2-inch) long No. 12-14 external hex washer head self-drilling screws spaced at a maximum of 304.8 mm (12-inches) on center horizontally along each intermediate support framing member.
3. **Intermediate Support Framing** – Intermediate wall framing members consist of minimum 16-gauge thick, 101.6 mm (4-inch) deep Z- or C-girts with 50.8 mm (2-inch) legs installed horizontally and spaced at a maximum of 1219.2 mm (48-inches) on center. The intermediate support framing members are secured to the perimeter framing members using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each end.
4. **Insulation** – Carlisle SealTite™ PRO HFO (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 33.16 kg/m<sup>3</sup> (2.07 lbs./ft<sup>3</sup>), must be applied at a nominal thickness of 101.6 mm (4-inches) between the intermediate support framing members, applied directly to the fire exposed face of the wall sheathing. SPF insulation must also be applied to the intermediate support framing members at a nominal thickness of 38.1 mm (1 1/2-inch) matching the contour of the Z- or C-girts. Application must be in accordance with the manufacturer's published instructions.
5. **Intumescent Coating (Exposed Face)** – International Fireproof Technology Inc. DC315 intumescent coating must be applied over the exposed surface of the spray foam insulation at a minimum 0.69 mm (27 mils) dry film thickness (DFT) on the fire exposed face of the wall assembly. Application must be in accordance with the manufacturer's published instructions.



## ICC Design No. IFRM-1577-03

**ESL-1577**

Issued April 2024

This listing is subject to renewal April 2025.

[www.icc-es.org](http://www.icc-es.org) | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**Applicant:** INTERNATIONAL FIREPROOF TECHNOLOGY INC.

**Product:** DC315 INTUMESCENT COATING

**Code Section:** Sections 3.1.7.1. and 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015

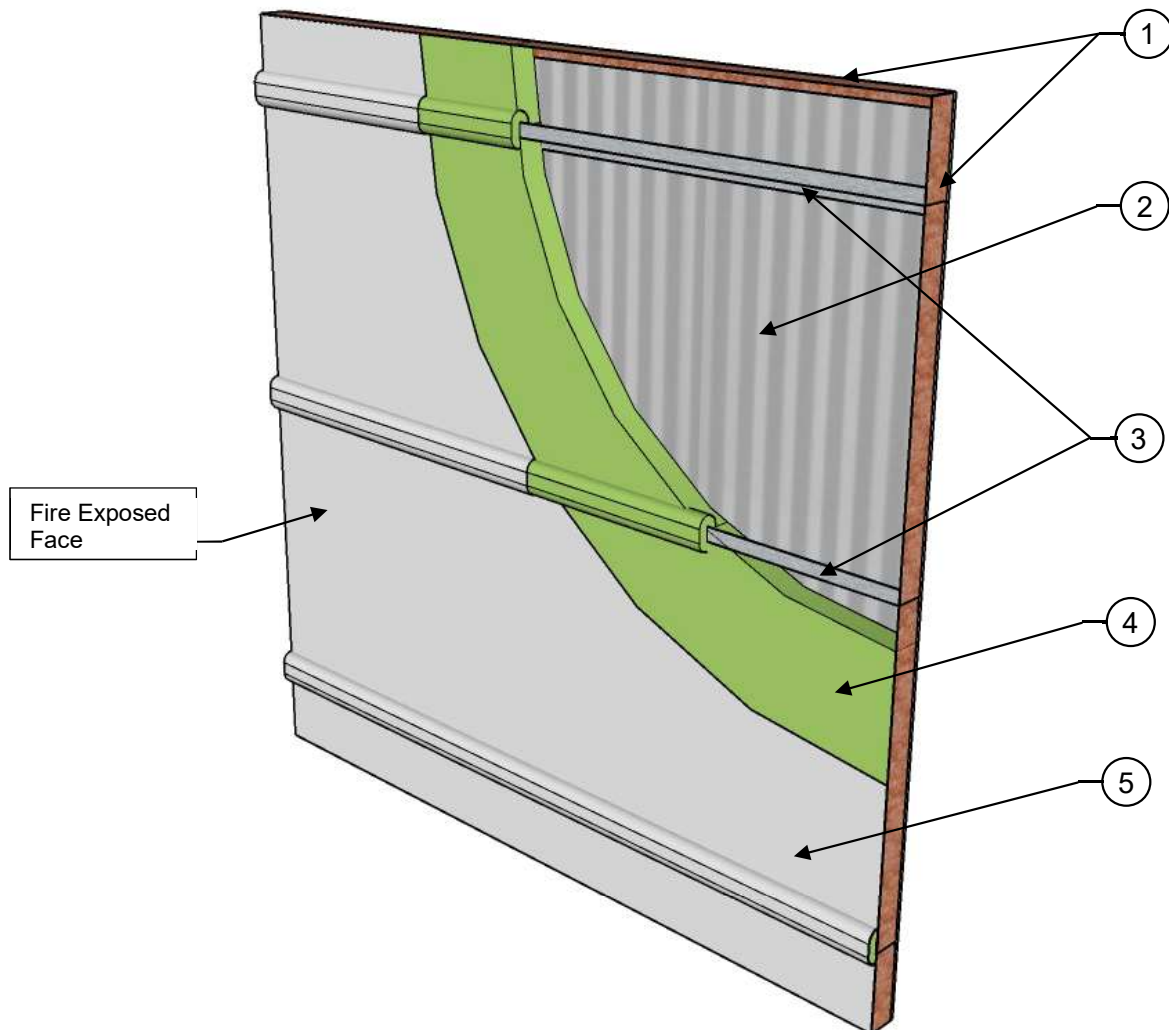
**Assembly Rating:** 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015,

1-Hour from the Fire Exposed Face (Asymmetrical Wall Assembly) where  $F_{EO} = 0.018$ ,

Note: See Conditions of Listing Item 4 of [ESL-1577](#)

**Load:** Non-loadbearing

IFRM = Intumescent Fire-Resistive Materials





**COMPONENTS OF CONSTRUCTION:**

1. **Perimeter Framing Members** – Minimum 16-gauge thick steel members with minimum 101.6 mm by 50.8 mm (4-inch by 2-inch) legs are used as perimeter framing for the wall assembly. The perimeter framing members are oriented to allow for wall sheathing attachment and secured to each other using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each corner.
2. **Wall Sheathing (Unexposed Face)** – Minimum 26-gauge thick and 914.4 mm (36-inch) wide commercial grade steel R-panels with 31.8 mm (1 1/4-inch) deep ribs must be installed vertically with panel seams overlapping in accordance with the manufacturer's published installation instructions. Panels must be secured to each other along the vertical overlapping seam using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center vertically. Panels are secured to the perimeter framing members using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center around the perimeter of the wall assembly. Panels must be secured to the intermediate support framing using 38.1 mm (1 1/2-inch) long No. 12-14 external hex washer head self-drilling screws spaced at a maximum of 304.8 mm (12-inches) on center horizontally along each intermediate support framing member.
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4. **Insulation** – Carlisle SealTite™ One (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 36.84 kg/m<sup>3</sup> (2.30 lbs./ft<sup>3</sup>), must be applied at a nominal thickness of 101.6 mm (4-inches) between the intermediate support framing members, applied directly to the fire exposed face of the wall sheathing. SPF insulation must also be applied to the intermediate support framing members at a nominal thickness of 38.1 mm (1 1/2-inch) matching the contour of the Z- or C-girts. Application must be in accordance with the manufacturer's published instructions.
5. **Intumescent Coating (Exposed Face)** – International Fireproof Technology Inc. DC315 intumescent coating must be applied over the exposed surface of the spray foam insulation at a minimum 0.61 mm (24 mils) dry film thickness (DFT) on the fire exposed face of the wall assembly. Application must be in accordance with the manufacturer's published instructions.

## ICC Design No. IFRM-1577-04

**ESL-1577**

Issued April 2024

This listing is subject to renewal April 2025.

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A Subsidiary of the International Code Council®

**Applicant:** INTERNATIONAL FIREPROOF TECHNOLOGY INC.

**Product:** DC315 INTUMESCENT COATING

**Code Section:** Sections 3.1.7.1. and 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015

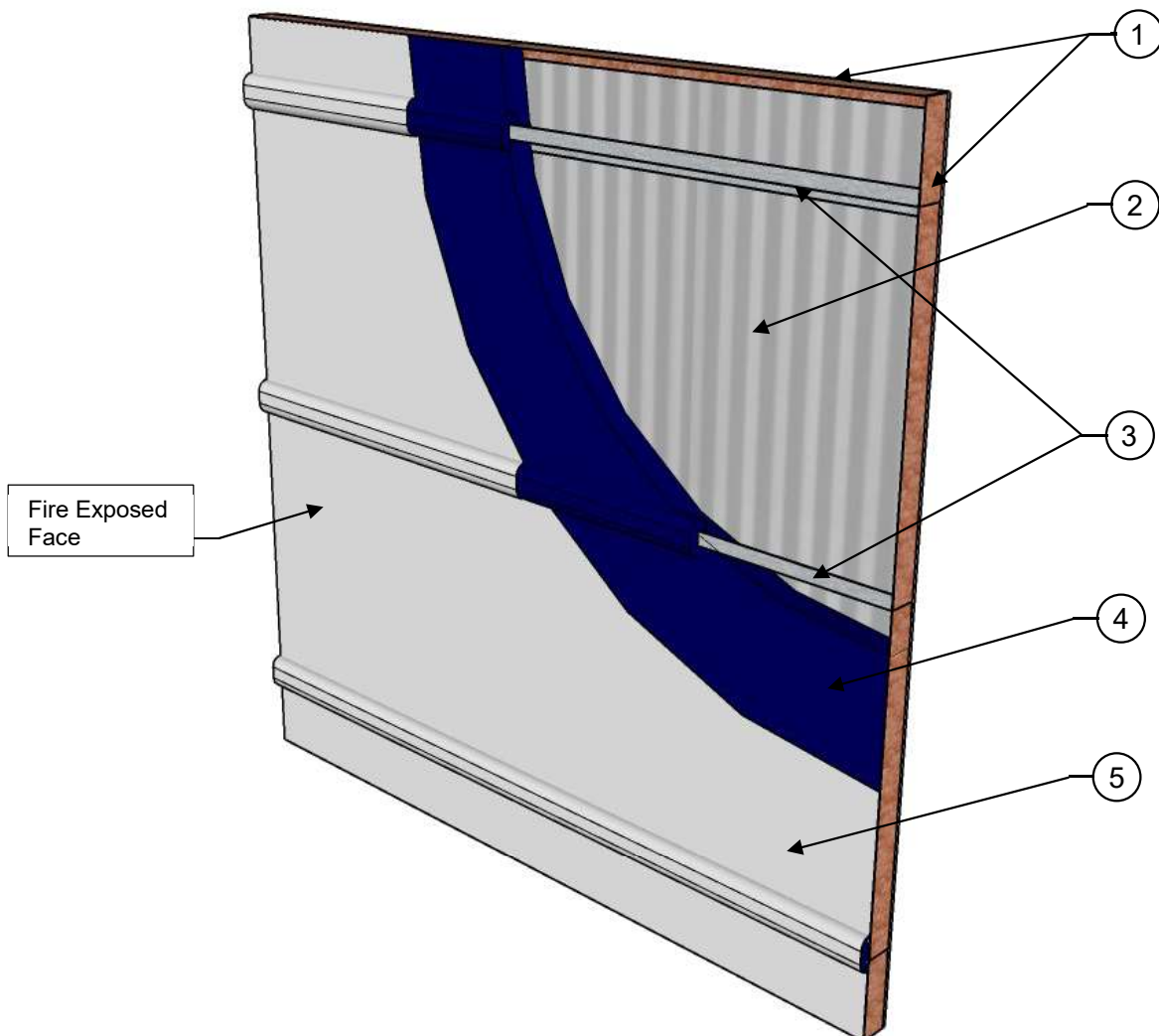
**Assembly Rating:** 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada*® 2020 and 2015,

1-Hour from the Fire Exposed Face (Asymmetrical Wall Assembly) where  $F_{EO} = 0.01$ ,

Note: See Conditions of Listing Item 4 of [ESL-1577](#)

**Load:** Non-loadbearing

IFRM = Intumescent Fire-Resistive Materials



**COMPONENTS OF CONSTRUCTION:**

1. **Perimeter Framing Members** – Minimum 16-gauge thick steel members with minimum 101.6 mm by 50.8 mm (4-inch by 2-inch) legs are used as perimeter framing for the wall assembly. The perimeter framing members are oriented to allow for wall sheathing attachment and secured to each other using minimum two 12.7 mm (1/2-inch) long No. 8 pan head self-drilling screws at each corner.
2. **Wall Sheathing (Unexposed Face)** – Minimum 26-gauge thick and 914.4 mm (36-inch) wide commercial grade steel R-panels with 31.8 mm (1 1/4-inch) deep ribs must be installed vertically with panel seams overlapping in accordance with the manufacturer's published installation instructions. Panels must be secured to each other along the vertical overlapping seam using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center vertically. Panels are secured to the perimeter framing members using 25.4 mm (1-inch) long No. 12 external hex washer head self-drilling screws spaced at a maximum of 406.4 mm (16-inches) on center around the perimeter of the wall assembly. Panels must be secured to the intermediate support framing using 38.1 mm (1 1/2-inch) long No. 12-14 external hex washer head self-drilling screws spaced at a maximum of 304.8 mm (12-inches) on center horizontally along each intermediate support framing member.
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4. **Insulation** – Elastochem Insulthane® Extreme Winter (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 34.92 kg/m<sup>3</sup> (2.18 lbs./ft<sup>3</sup>), must be applied at a nominal thickness of 101.6 mm (4-inches) between the intermediate support framing members, applied directly to the fire exposed face of the wall sheathing. SPF insulation must also be applied to the intermediate support framing members at a nominal thickness of 38.1 mm (1 1/2-inch) matching the contour of the Z- or C-girts. Application must be in accordance with the manufacturer's published instructions.
5. **Intumescent Coating (Exposed Face)** – International Fireproof Technology Inc. DC315 intumescent coating must be applied over the exposed surface of the spray foam insulation at a minimum 0.61 mm (24 mils) dry film thickness (DFT) on the fire exposed face of the wall assembly. Application must be in accordance with the manufacturer's published instructions.



International Fireproof Technology, Inc.  
17528 Von Karman Ave. Irvine, CA 92614  
Office: 949-975-8588

**IFTI SPEC NOTE:** This master specification is written to include SPEC NOTES noted as “IFTI Spec Note” in order to assist designers in their decision-making process. SPEC NOTES precede the text to which they apply. This section should serve as a guideline only and should be edited by a knowledgeable person to meet the requirements of each specific project.

Text indicated in bold and by square brackets is optional. Make appropriate decisions and delete the optional text as well as the brackets in the final copy of the specification. Delete or hide the SPEC NOTES in the final version of the document.

This specification section is written to follow the recommendations of the Construction Specifications Institute/Construction Specifications Canada (CSI/CSC) such as MasterFormat™, SectionFormat™, and PageFormat™. It is also written with metric and imperial units of measurement.

**DISCLAIMER:** To the best of our knowledge, all technical data contained herein is true and accurate as of the date of issuance and subject to change without prior notice. User must contact IFTI to verify correctness before specifying or ordering. We guarantee our products to conform to the quality control standards established by IFTI. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of the product.

**NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY IFTI™ EXPRESSED OR IMPLIED; STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

## PART 1 - GENERAL

**IFTI Spec Note: Use the following information as additional wording to Section 07 21 19. Use relevant paragraphs as necessary**

### 1.1 SUMMARY

1. Surface preparation and application of fire-protective intumescent thermal barrier coating to spray-applied polyurethane foam insulation.

### 1.2 INFORMATIONAL SUBMITTALS

1. Evaluation reports: Submit reports in accordance with **[CCMC#14036-R]** or **[ULC ER39793-01]** showing compliance with applicable building codes.
  1. Submit Evaluation report from accredited independent evaluation agency, indicating compliance of intumescent thermal barrier with specifications for specified performance characteristics and physical properties.

### 1.3 QUALITY ASSURANCE

1. Qualifications:
  1. **[Thermal Barrier Installer: company specializing in intumescent thermal barrier installations with 3 years documented experience and approved by manufacturer.]**

### 1.4 DELIVERY, STORAGE, AND HANDLING

1. Thermal Barriers:
  1. Deliver materials to the project in manufacturer's unopened packages, fully identified as to trade name, type and other identifying data. Handle and store in accordance with manufacturer's instructions.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

1. Thermal Barrier Coating Manufacturer:
  1. International Fireproof Technology Inc; 17528 Von Karman Ave, Irvine, CA 92614, United States Tel: (949) 975-8588 Web: [www.painttoprotect.com](http://www.painttoprotect.com); as listed in this Specification.
  2. Substitution Limitations: **[No further substitutions are acceptable.] [Conforming to requirements of Section 01 25 00 - Substitution Procedures]**

<IssueDate>

## 2.2 INTUMESCENT THERMAL BARRIER COATING SYSTEM

### 1. Regulatory Requirements:

1. Products shall meet requirements of municipal, or federal authorities having jurisdiction.
2. Intumescent fire protective coating systems shall comply with the following requirements:
  1. Provide rated systems complying with the following requirements based on tests performed by a qualified testing agency acceptable to authorities having jurisdiction:
  2. All systems and products shall bear the classification rating and listing of a qualified testing agency based on designations listed by one of the following:

**IFTI Spec Note: Retain only subparagraph(s) below that reference the directories of testing agency or agencies approved by authorities having jurisdiction.**

1. CAN/ULC S102
2. CAN/ULC S101
3. CAN/ULC S145
4. CCMC#14036-R
5. ULC ER39793-01

### 2. Design and Performance Requirements:

#### 1. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated.
2. Apply all products according to spreading rates recommended in writing by intumescent thermal barrier coating manufacturer.
3. Comply with requirements for fire-protective coating classification and surface-burning characteristics indicated.

#### 2. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

### 3. Bonding Primer (required): Waterborne, acrylic emulsion, adhesion-promoting bonding primer recommended in writing by manufacturer.

#### 1. Application thickness (DFT):

1. Prime Coat: 2 – 5 mils dft.

#### 2. Acceptable product:

1. Dulux Gripper 6000A Universal Primer
2. Sherwin Williams DTM Bonding Primer
3. Sherwin Williams Extreme Bond Primer
4. Zinsser Bondz Primer
5. General Coatings Mfg. Corp. Ultra Bond 16
6. Approved equivalent recommended in writing by intumescent thermal barrier manufacturer.

### 4. Fire-protective Intumescent Thermal Barrier Coating:

<IssueDate>

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1. Protective coating with following characteristics, specifically formulated for application over polyurethane foam plastics and compatible with insulation:
  1. Finish: Flat
  2. Color: [Ice Grey] [White] [Dark Grey] [Charcoal Black]
  3. VOC Content: 19 g/L less water as per EPA 24
  4. Shore D Hardness (before topcoat and finish coat are applied): 40.
  5. Solids by Volume: 67%
  6. Specific Gravity: 1.30 +/- 0.05 g/cc
  7. Drying Time @ 25 deg C (77 deg F) and 50% R.H:
    1. To touch: 1-2 hours
    2. To recoat (if required): 2-4 hours
  8. Flashpoint: None
  9. Reducing or Cleaning: Water
2. Application thickness (DFT): **Check appropriate test or evaluation report for required wet film thickness (WFT) and gallon per square coverage required to meet the specified rating.** Any single coat not to exceed 24 mils Wet Film
  1. Combustible Construction: One Coat 13 -14 mils DFT
  2. Non-Combustible Construction: One or Two Coats for a total of 16 mils DFT
  3. ULC S-101 60 minute rating: Total 22 mils DFT applied in two coats
    1. First Coat 11 – 12 mils DFT
    2. Second Coat 11- 12 mils DFT
3. Acceptable Product: "DC315" by International Fireproof Technology Inc.
5. Decorative Topcoat (where desired)
  1. Interior conditioned spaces: Water based latex-based paint recommended in writing by manufacturer compatible with substrate and other materials indicated.
    1. Application thickness (DFT):
      1. First Coat: 1.8 – 2.4 mils dft
      2. Second Coat: 1.8 – 2.4 mils dft.
    2. Acceptable product:
      1. Dulux Ultra flat, eggshell, pearl, and semi-gloss
      2. Dulux Spraymaster Waterbased Dryfall
      3. Sherwin Williams ProMar 200 0 VOC Flat, EgShel, Semi-Gloss
      4. Sherwin Williams Pro Industrial Dryfall
      5. Approved equivalent recommended in writing by intumescent thermal barrier manufacturer.
6. Protective Topcoat: (where required)\*
  1. Interior unconditioned spaces subject to humidity, condensation or at risk of direct contact with moisture: exterior/interior, VOC compliant, protective topcoat.
    1. Application thickness (DFT):
      1. First Coat: 2 – 4 mils dft.
      2. Second Coat: 2— 4 mils dft.

<IssueDate>

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2. Acceptable Product:
  1. PPG PittTech Plus, Single Component, Enamel
  2. PPG Aquapon WB, Tow Component, Water-Borne Epoxy
  3. Sherwin Williams Pro Industrial Acrylic
  4. Sherwin Williams Sher-Cryl HPA
  5. Sherwin Williams SteelMaster 9500
  6. Approved equivalent recommended in writing by intumescent thermal barrier manufacturer.\*
2. Unconditioned spaces subject to constant high humidity, condensation or at risk of direct contact with moisture: industrial, exterior/interior, VOC compliant, protective topcoat.
  1. Application thickness (DFT):
    1. First Coat: 2 – 4 mils dft.
    2. Second Coat: 2— 4 mils dft.
  2. Acceptable Product:
    1. PPG Aquapon WB, Tow Component, Water-Borne Epoxy
    2. Sherwin Williams Pro Industrial Waterbased Acrolon 100
    3. Sherwin Williams Pro Industrial Waterbased Catalyzed Epoxy
    4. Approved equivalent recommended in writing by intumescent thermal barrier manufacturer.\*
3. Exterior Continuous Insulation systems as a component of exterior wall systems as shown in UL File FWFO.EWS0054 when installed behind approved claddings.
  1. Application thickness (DFT):
    1. First Coat: 2 – 4 mils dft.
    2. Second Coat: 2— 4 mils dft.
  2. Acceptable Product:
    1. Sherwin Williams Sher-Cryl HPA

\*Topcoats have been investigated as to not reduce the fire resistance rating of the specific intumescent coating listed. Authorities Having Jurisdiction, Architects, Engineers or Specifiers should be consulted as to the particular requirements covering the installation and use of any coatings listed.

## 7. Accessories

1. Provide accessories to comply with manufacturer's recommendations and to meet fire resistance design and code requirements. Such accessories include, but are not limited to, any required or optional items such as bonding agents, mechanical attachments and application aids.



## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF THERMAL BARRIER COATINGS**

1. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated. Refer to test report for applicable brand and type of sprayed polyurethane foam to verify compatibility. Provide compatible primer approved by intumescent thermal barrier manufacturer to required surfaces where required by applicable test reports.
2. Apply intumescent thermal barrier coatings according to manufacturer's written instructions and to comply with requirements for fire-protective coating classification and applicable test reports for spray urethane foam insulation.
3. Upon completion of installation, clean excess material, overspray, and debris. Remove and clear such materials from Project site.
4. Ensure patching of, and repair to, intumescent thermal barriers due to damage by other trades, is performed under this section, and paid for by trade responsible for damage.
5. Ensure patching is performed by an applicator with expertise in the installation of intumescent thermal barrier coatings.
6. Continuously monitor WFT by performing checks to ensure correct thicknesses are applied.

### **3.2 IDENTIFICATION**

1. Upon completion, provide job site label or similar method of identifying product used. Affix job site label in a prominent location, clearly indicating applicator's name, contact information, company information, products used, and measured thickness.

## **END OF SECTION**

**DISCLAIMER: To the best of our knowledge, all technical data contained herein is true and accurate as of the date of issuance and subject to change without prior notice. User must contact IFTI to verify correctness before specifying or ordering. We guarantee our products to conform to the quality control standards established by IFTI. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of the product. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY IFTI™ EXPRESSED OR IMPLIED; STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**



# Certificate of Compliance

This certificate is issued for the following:

DC315

**Prepared for:**

International Carbide Technology Co Ltd  
No 1-17 Tao-Chan 12 Ling, Kern-Ko Village  
Lu-Chu Hsiang, Taoyuan 338  
Taiwan

FM Approvals Class: 4975

Approval Identification: PR450764 Approval Granted: 3/12/19

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

A handwritten signature in dark blue ink, reading 'Phillip J. Smith'.

---

Phillip J. Smith  
VP - Manager of Materials  
FM Approvals  
1151 Boston-Providence Turnpike  
Norwood, MA 02062



*Member of the FM Global Group*

## **BUILDING PRODUCTS LISTING PROGRAM**

Customer: **International Fireproof Technology Inc (IFTI)**

Class: Applied Fireproofing  
Location: Irvine, CA  
Website: [www.painttoprotect.com](http://www.painttoprotect.com)

Listing No. B1117-2  
Project No. B1117-2, Edition 2  
Effective Date: Aug 23, 2018  
Last Revised Date: May 8, 2019  
Expires: <N/A>

Standards: ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials".

ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials", Extended 20 minutes.

ASTM E2768 "Extended Duration Surface Burning Characteristics of Building Materials (30 Min Tunnel Test) ".

ASTM E119 "Standard Test Method for Fire Tests of Building Construction and Materials".

CAN/ULC S101 "Standard Methods of Fire Endurance Tests of Building Construction and Materials."

NFPA 286 "Standard Methods of Fire Tests Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth".

CAN/ULC-S145 "Standard Method of Test for the Evaluation of Protective Coverings for Foamed Plastic Insulation - Full-Scale Room Test."

Product: DC315 Intumescent Coating.

Description: DC315 is an intumescent coating used as an interior ignition or thermal barrier coating (Per IBC) for application over spray polyurethane foam (SPF) Insulation. DC315 may be produced in the following colors: White, Ice Gray, Dark Gray and Charcoal Black.

Uses: DC315 is an ignition and thermal barrier coating (Per IBC) for application to spray polyurethane foam (SPF) insulation. DC315 is a water based latex product. DC315 is typically applied with a paint sprayer, brush or roller.

See manufacturers published installation instructions for application details.

Markings: Product is marked with labels or stamp supplied by IFTI to each container. The markings include:

- Manufacturer's name, trademark, or other recognized symbol of identification,
- Product name,
- QAI File Number: B1117,
- Date of manufacture or date code on the label or stamp,
- ASTM E84 (ASTM E2768) Flame Spread Index / Smoke Developed Index
- QAI logo shown here:



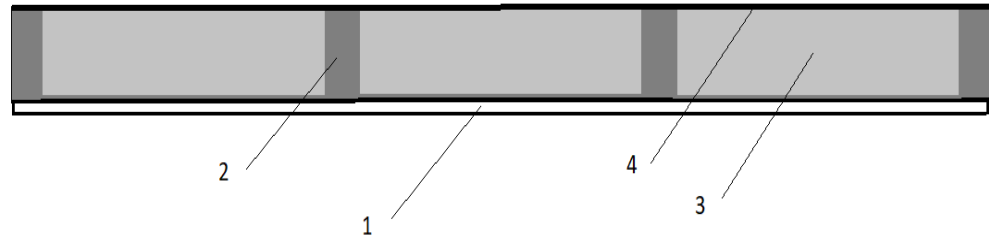
Models / Ratings: The following outlines DC315 intumescent coating ratings.

Standard	Ratings	Limitations
ASTM E84	FSI $\leq$ 25 SDI $\leq$ 450	DC315 applied at (min. 20 wmils)
ASTM E84 Extended 20 minutes (ASTM E2768)	FSI $\leq$ 25 SDI $\leq$ 450	DC315 applied at (min. 20 wmils)
ASTM E119 / CAN/ULC S101	DC315 achieved a 25 min rating for asymmetrical design as with DC315 exposed to the Fire side.	DC315 applied at (min. 18 wmils) see Figure 1
NFPA 286	Complies with section 2603.9 Special approval of IBC 2015 for installation without code prescribed thermal barrier.	See current IFTI Code Evaluation report for required installation details and approved foam plastic types.
CAN/ULC S145	20 Minute Classification.	DC315 when applied with a 3 wmil primer and a 25 wmils thickness - 20 minute classifications of ULC S145 when applied over 3 1/2 in thick SPF meeting CAN/ULC S705.1

**Figure 1: B1117-2-1 Asymmetric fire assembly design, non-load bearing wall assembly – 25 minutes**



## Side exposed to Fire



- 1) ½ in. thick approved Type C gypsum wallboard fastened to one side of the framing using 1-1/4in drywall screws spaced 8 in. on center.
- 2) Nominal 2 in. by 4 in. Studs, located 16 in on center.
- 3) LaPolla Industries Foam-Lok spray foam insulation or equivalent inside the cavity to an average thickness of 3-1/2 in
- 4) DC315 intumescent paint applied to a WFT of 18 mils in total

The materials, products or systems listed herein have been qualified to bear the QAI Listing Mark under the conditions stated with each Listing. Only those products bearing the QAI Listing Mark are considered to be listed by QAI. No warrantee is expressed or implied, and no guarantee is provided that any jurisdictional authority will accept the Listing found herein. The appropriate authorities should be contacted regarding the acceptability of any given Listing. Visit the QAI Online Listing Directory located at [www.qai.org](http://www.qai.org) for the most up to date version of this Listing and to validate that this QAI Listing is active. Questions regarding this listing may be directed to [info@qai.org](mailto:info@qai.org). Please include the listing number in the request.

\*\*\*



Environmental Self Declaration – Volatile Organic Compounds.  
Made in Accordance with **ClearChem** Standard BkA-CC-01

# Self-Declared Certificate of Product Conformity VOC Emissions



## Company Information

Company Name:	International Fireproof Technology Inc
Contact Information:	949-975-8588
Website:	<a href="http://www.painttoprotect.com">www.painttoprotect.com</a>

## Product Information

Product Name:	DC315
Product Numbers <sup>1</sup> :	DC315-IG, DC315-W, DC315-DG, DC315-BK

<sup>1</sup>All listed product numbers are within single product line & vary solely with respect to physical attributes or parameters not associated with VOC content or emissions.

Product Line:	Intumescent Coatings
Product Category:	Paints

## Exclusions

Exclusions:	None
-------------	------

## VOC Content

Regulatory VOC Content g/L:	18.6
Regulation:	SCAQMD Rule 1113
Category:	Architectural Coatings
VOC Content test or determination method:	U.S EPA Method 24

Exempt compounds >1% weight by mass of product:	none
Does product contain methylene chloride or perchloroethylene?:	No

## VOC Emissions

Test Standard:	CDPH Standard Method V1.2
Acceptance Criteria:	CDPH Standard Method V1.2
Use scenario(s) Product type:	Wall Paint & Wall Coverings
Building Type:	Classroom+Office
Product coverage g/m <sup>2</sup> :	876 g/m <sup>2</sup>
TVOC concentration at 14-days:	Less or equal to 0.5 mg/m <sup>3</sup>
Direct or extended claim:	Direct

## Compliance Testing

ISO/IEC 17025 accredited third-party laboratory:	Berkeley Analytical, IAS TL-383
Test start date:	03/11/2022
Laboratory certificate number:	220330-03

## Extended Claim for Co-product

Name of compliance tested product:	Not Applicable
Number:	Not Applicable
Was listed product screening-level tested for VOC emissions?:	Not Applicable
Basis for extension of claim from compliant product to co-product:	Not Applicable
Brief description of procedures used to ensure product is represented by compliance test results:	Not Applicable

## Quality Control

Company maintains internal quality control program to ensure manufactured units are produced consistently and meet the requirements and acceptance criteria of listed standard(s):	Yes
Tested product sample was selected from typical production and is representative of commercial product. Where there are expected variations, sample was selected from production lot or group expected to give worst-case results:	Yes
If claim is for product other than product that was sampled and compliance tested, company maintains record of procedures used for extending claim in form of test results, calculations, formulations, or other information:	Not Applicable

## Self-Declaration Signature

I affirm that I am authorized to make claims established in this declaration:	Yes
I certify that the information in this declaration is true and correct:	Yes
Date:	05/06/2022
Name of company representative:	Chris Hsu
Title:	President
Signature:	Chris Hsu

This ClearChem template is a standardized reporting form used by companies to make self-declared claims about the environmental performance of their products. Only companies that have entered into a binding Implementation Agreement with Berkeley Analytical may use this form.

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## COMPLIANCE TESTED by berkeley analytical

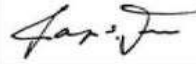
### VOC Emission Test Certificate

**Product Name:** DC315 Intumescent Coating

#### Product Sample Information

Company:	International Fireproof Technology Inc
Company Website:	www.painttoprotect.com
Product Type:	Paints & Coatings
Date Produced:	3/3/2022

#### Certificate Information

Certificate No:	220330-03
Certified By:	 Raja S. Tannous, Laboratory Director
Date:	March 30, 2022

**Reference Standard:** California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017  
(Emission testing method for CA Specification 01350)

#### Acceptance Criteria and Results Demonstrating Compliance of Product Sample to Referenced Standard:

Exposure Scenario <sup>1</sup>	Individual VOCs of Concern <sup>2</sup>		Formaldehyde <sup>3</sup>		TVOC <sup>4</sup>
	Criterion	Compliant?	Criterion	Compliant?	Range
School Classroom	≤½ Chronic REL	YES	≤9.0 µg/m <sup>3</sup>	YES	≤ 0.5 mg/m <sup>3</sup>
Private Office	≤½ Chronic REL	YES	≤9.0 µg/m <sup>3</sup>	YES	≤ 0.5 mg/m <sup>3</sup>

**Product Coverage<sup>5</sup>:** 876 g/m<sup>2</sup> (based on 22 mil WFT and modeling for wall applications)

1. Exposure scenarios & product quantities for classroom & office are defined in Tables 4-2 – 4-5 (CDPH Std. Mtd. V1.2-2017)
2. Maximum allowable concentrations of individual target VOCs are specified in Table 4-1 (*ibid.*)
3. Maximum allowable formaldehyde concentration is ≤9 µg/m<sup>3</sup>, effective Jan 1, 2012; previous limit was ≤16.5 µg/m<sup>3</sup> (*ibid.*)
4. Informative only; predicted TVOC Range in three categories, i.e., ≤0.5 mg/m<sup>3</sup>, >0.5 – 4.9 mg/m<sup>3</sup>, and ≥5.0 mg/m<sup>3</sup>
5. Informative and applicable only to tests of wet-applied products; grams of sample applied per square meter of substrate

#### Standards & Codes Recognizing CDPH Standard Method V1.2 (partial list)

- USGBC LEED Version 4/4.1, BD&C, ID&C, Residential BD&C Multifamily
- The WELL Building Standard, WELL v2, Feature X06
- ANSI/GBI 01-2019 Green Globes Assessment Protocol
- ANSI/ASHRAE/USGBC/IES Standard 189.1

**Narrative:** International Fireproof Technology Inc selected a sample representative of its DC315 Intumescent Coating - fire resistant coating product and submitted it on 3/7/2022 for testing. Berkeley Analytical measured and evaluated the emissions of VOCs from this sample following CDPH/EHLB/Standard Method V1.2-2017. The results of the test are presented in Berkeley Analytical report, 469-006-01A-Mar3022.

**Berkeley Analytical** is an independent, third-party laboratory specializing in the analysis of organic chemicals emitted by and contained in building products, finishes, furniture, and consumer products. We are an ISO/IEC 17025 accredited laboratory (IAS, [TL-383](#)); all standards used in performing this test are in Berkeley Analytical's scope of accreditation.

**DISCLAIMER:** THIS CERTIFICATE OF COMPLIANCE AFFIRMS THAT: 1) A SAMPLE OF THE LISTED PRODUCT WAS TESTED ACCORDING TO THE REFERENCED STANDARD; 2) THE MEASURED VOC EMISSIONS FROM THE SAMPLE WERE EVALUATED FOR THE DEFINED EXPOSURE SCENARIO(S); AND 3) THE RESULTS MEET THE ACCEPTANCE CRITERIA OF THE REFERENCED STANDARD(S). BERKELEY ANALYTICAL IS NOT RESPONSIBLE FOR ANY CLAIMS REGARDING A PRODUCT OR PRODUCTS ENTERED INTO COMMERCE THAT MAY BE BASED ON THIS TEST. BERKELEY ANALYTICAL PROVIDES THIS CERTIFICATE OF COMPLIANCE "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

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FC17B.2



# Water based intumescent paint for foam plastic

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 8 December 2017

Version: 1.0

### SECTION 1: Identification

#### 1.1. Identification

Product form : Mixture  
Trade name : Water based intumescent paint for foam plastic  
Product code : DC315

#### 1.2. Recommended use and restrictions on use

Use of the substance/mixture : Fireproof coating for foam plastic

#### 1.3. Supplier

International Fireproof Technology, Inc.  
17528 Von Karman Ave.  
Irvine, CA 92614  
T 949-975-8588  
[tom@painttoprotect.com](mailto:tom@painttoprotect.com) (Tom Hsiang)

#### 1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Acute toxicity (oral), Category 4 H302 Harmful if swallowed.  
Serious eye damage/eye irritation, Category 2B H320 Causes eye irritation  
Full text of H statements: see section 16

#### 2.2. GHS Label elements, including precautionary statements

##### GHS-US labelling

Hazard pictograms (GHS-US) : None  
Signal word (GHS-US) : None  
Hazard statements (GHS-US) : The mixture does not meet the criteria for classification.  
  
Precautionary statements (GHS-US) : P264 - Wash hands thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P301+P312 - If swallowed: Call a POISON CENTER, a doctor if you feel unwell  
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P330 - Rinse mouth.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P501 - Dispose of contents/container to comply with applicable local, national and international regulation.

#### 2.3. Other hazards which do not result in classification

other hazards which do not result in classification : Titanium dioxide is in a form that is not available for respiration.

#### 2.4. Unknown acute toxicity (GHS US)

Not applicable

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Not applicable

#### 3.2. Mixtures

The manufacturer lists no ingredients as hazardous to health according to OSHA 29 CFR 1910.1200.

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Full text of hazard classes and H-statements: see section 16

### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

- |                                       |  |
|---------------------------------------|--|
| First-aid measures after inhalation   | : Move the affected person away from the contaminated area and into the fresh air. Get medical advice/attention if you feel unwell.  |
| First-aid measures after skin contact | : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention.     |
| First-aid measures after eye contact  | : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| First-aid measures after ingestion    | : Rinse mouth. Do NOT induce vomiting. Get medical advice/attention.   |

#### 4.2. Most important symptoms and effects (acute and delayed)

- |                                     |   |
|-------------------------------------|---|
| Symptoms/effects after skin contact | : May cause mild irritation in sensitive individuals. |
| Symptoms/effects after eye contact  | : Causes eye irritation.                              |
| Symptoms/effects after ingestion    | : Harmful if swallowed.                               |

#### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media

- |                                |   |
|--------------------------------|---|
| Suitable extinguishing media   | : Use extinguishing media appropriate for surrounding fire. |
| Unsuitable extinguishing media | : None known.   |

#### 5.2. Specific hazards arising from the chemical

- |                  |  |
|------------------|--|
| Fire hazard      | : Not classified as flammable but will burn. On combustion forms: Carbon oxides (CO, CO <sub>2</sub> ). Nitrogen oxides. Metal oxides. |
| Explosion hazard | : Heating will cause pressure rise with risk of bursting and subsequent explosion.   |
| Reactivity       | : Stable under normal conditions of use.   |

#### 5.3. Special protective equipment and precautions for fire-fighters

- |                                       |  |
|---------------------------------------|--|
| Firefighting instructions             | : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent firefighting water from entering the environment. |
| Protective equipment for firefighters | : Do not enter fire area without proper protective equipment, including respiratory protection. refer to section 8.  |

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

- |                  |   |
|------------------|---|
| General measures | : Avoid contact with eyes. Avoid breathing mist or vapor. Spilled material may present a slipping hazard. |
|------------------|---|

##### 6.1.1. For non-emergency personnel

- |                      |   |
|----------------------|---|
| Emergency procedures | : Evacuate unnecessary personnel. Wear personal protective equipment as required. |
|----------------------|---|

##### 6.1.2. For emergency responders

- |                      |  |
|----------------------|--|
| Protective equipment | : Equip cleanup crew with proper protection. Wear approved self-contained breathing apparatus (set on positive pressure mode). Refer to section 8. |
| Emergency procedures | : Ventilate area.  |

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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### 6.3. Methods and material for containment and cleaning up

- Methods for cleaning up
- : Small spills: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
  - : Large spills: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

### 6.4. Reference to other sections

Refer to sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling
- : Provide good ventilation in process area to prevent formation of vapor. Avoid contact with eyes. Avoid breathing mist or vapor. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Hygiene measures
- : Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions
- : Keep only in the original container in a cool, well ventilated place away from incompatible materials. Keep container closed when not in use.
- Incompatible materials
- : Organic solvent. Strong acids. Alkalis. Oxidizing agent.
- Storage temperature
- :  $\approx 5 - 35^{\circ}\text{C}$  (Use up as soon as possible after opening the lid)

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Ammonium polyphosphate (68333-79-9)		
Not applicable		
Titanium dioxide (13463-67-7)		
ACGIH	Local name	Titanium dioxide
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
ACGIH	Remark (ACGIH)	LRT irr; A4
ACGIH	Regulatory reference	ACGIH 2017
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup>
OSHA	Regulatory reference (US-OSHA)	OSHA

### 8.2. Appropriate engineering controls

- Appropriate engineering controls
- : Provide adequate ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

### 8.3. Individual protection measures/Personal protective equipment

#### Hand protection:

Impervious gloves e.g. PVC, nitrile rubber, butyl rubber

#### Eye protection:

Chemical goggles or safety glasses

#### Respiratory protection:

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In case of inadequate ventilation wear respiratory protection. NIOSH/MSHA approved air purifying respirator should be used if operating conditions produce airborne concentrations that exceed exposure limits for any individual components. If conditions immediately dangerous to life or health exist, use NIOSH/MSHA self-contained breathing apparatus (SCBA).

### Other information:

Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: White, grey
Odour	: Mild emulsion odor
Odour threshold	: No data available
pH	: 6 - 8
Melting point	: No data available
Freezing point	: No data available
Boiling point	: > 100 °C
Flash point	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Not applicable
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.35±0.1 (Specific gravity)
Solubility	: Miscible with water.
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 8000 - 20000 cP
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

### 9.2. Other information

Volatile components %	: 30 – 45 %
-----------------------	-------------

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Stable under normal conditions of use.

### 10.2. Chemical stability

Stable under normal conditions of use.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

Strong acids. Organic solvents. Alkalis. Oxidizing agent.

### 10.6. Hazardous decomposition products

On combustion forms: Nitrogen oxides. Carbon oxides (CO, CO<sub>2</sub>). Metal oxides.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

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Acute toxicity : Oral: Harmful if swallowed.

### Water based intumescent paint for foam plastic

ATE (oral)	1666 mg/kg bodyweight
------------	-----------------------

Skin corrosion/irritation : Not classified  
pH: 6 - 8

Serious eye damage/irritation : Causes eye irritation.  
pH: 6 - 8

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

### Titanium dioxide (13463-67-7)

IARC group	2B - Possibly carcinogenic to humans
------------	--------------------------------------

In OSHA Hazard Communication Carcinogen list	Yes
--	-----

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Likely routes of exposure : Ingestion. Inhalation. Skin and Eye contact.

Symptoms/effects after skin contact : May cause mild irritation in sensitive individuals.

Symptoms/effects after eye contact : Causes eye irritation.

Symptoms/effects after ingestion : Inhalation of titanium dioxide dust may cause cancer, however due to the physical form of the product, inhalation of dust is not likely. Expected to be a low ingestion hazard.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : The product components are not classified as environmentally hazardous.

### Ammonium polyphosphate (68333-79-9)

LC50 fish 1	> 500 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
-------------	--

LC50 fish 2	123 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
-------------	--

### 12.2. Persistence and degradability

#### Water based intumescent paint for foam plastic

Persistence and degradability	Not established.
-------------------------------	------------------

### 12.3. Bioaccumulative potential

#### Water based intumescent paint for foam plastic

Bioaccumulative potential	Not established.
---------------------------	------------------

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Other information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Product/Packaging disposal recommendations : Dispose of contents/container to comply with applicable local, national and international regulation, a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.



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### SECTION 14: Transport information

#### Department of Transportation (DOT)

In accordance with DOT

Not regulated

#### Transportation of Dangerous Goods

Not regulated

#### Transport by sea

Not regulated

#### Air transport

Not regulated

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

#### 15.2. International regulations

##### CANADA

###### Ammonium polyphosphate (68333-79-9)

Listed on the Canadian DSL (Domestic Substances List)

###### Titanium dioxide (13463-67-7)

Listed on the Canadian DSL (Domestic Substances List)

##### EU-Regulations

###### Ammonium polyphosphate (68333-79-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

###### Titanium dioxide (13463-67-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

##### National regulations

###### Ammonium polyphosphate (68333-79-9)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Japanese ISHL (Industrial Safety and Health Law)  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on Turkish inventory of chemical  
Listed on the TCSI (Taiwan Chemical Substance Inventory)

###### Titanium dioxide (13463-67-7)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Japanese ISHL (Industrial Safety and Health Law)  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)  
Listed on Turkish inventory of chemical  
Listed on the TCSI (Taiwan Chemical Substance Inventory)

#### 15.3. US State regulations

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California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogenic or reproductive toxins. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### SECTION 16: Other information

Date of Issue : 8 December 2017  
Other information : None.

Abbreviations and acronyms:

PVC	Polyvinyl chloride
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SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*