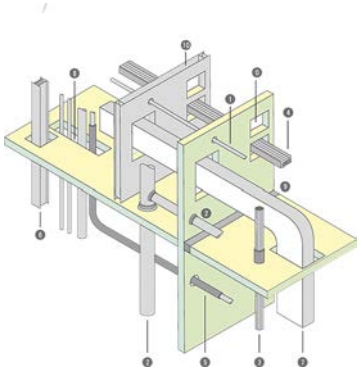




International Fireproof Technology Inc
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Submittal

Technical Service 1-949 975 8588 * Fax 1 949 724 8898

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 evaluted 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: at 77˚F & 50% RH	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 2015 NBCC Section 3.1.5.12, 2020/2025 NBCC Section 3.1.5.15 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

International Fireproof Technology Inc.
The Ultimate in Firestop Solutions and Fire Protective Coatings

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

Office: 949-975-8588
WebSite: www.painttoprotect.com
Email: ptp@painttoprotect.com

"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 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.

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.

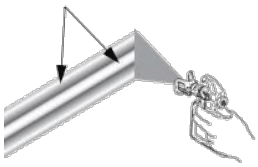
Use the following rules for hose diameter & length:

- 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

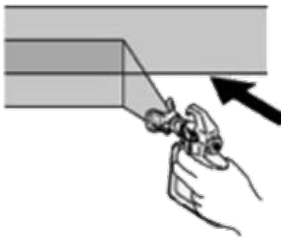




atomized and distributed evenly on the surface. Hose length should be appropriate for your machine and always ensure your feed hose is larger than your whip. Having a smaller whip will serve to re-pressurize the coating at the spray gun and assist in correct atomization of the coating.

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 ft² per gallon, then a 5-gallon pail would cover 575 ft². 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

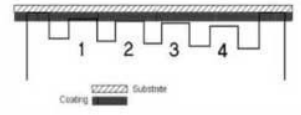


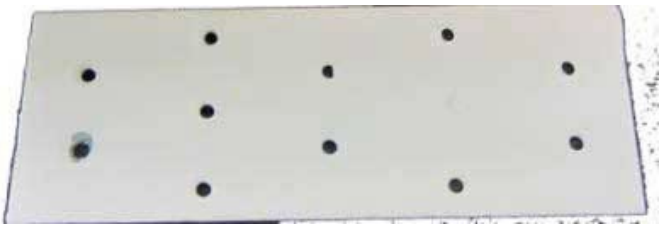
Figure 2

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





General Safety, PPE, Toxicity, Health Data
View our video on PPE

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. 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

CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC EVALUATION

CCMC 14036-R

CCMC Canadian code compliance evaluation

CCMC number:	14036-R
Status:	Active
Issue date:	2016-06-03
Modified date:	2026-03-26
Evaluation holder:	**International Fireproof Technology Inc.** 17528 Von Karman Avenue Irvine CA 92614 United States Website: www.painttoprotect.com Telephone: 949-975-8588 Email: ptp@painttoprotect.com
Product name:	DC315
Compliance:	NBC 2015, NBC 2020
Criteria:	CCMC-TG-099648-15, "CCMC Technical Guide for Intumescent Coatings as a Thermal Barrier over Spray Urethane Insulation" CCMC-TG-099648-20, "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.

Compliance opinion

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

National Building Code of Canada 2015

Code provision	Solution type
3.1.4.2.(1)(a) by one of the interior finishes describe ...	Alternative
3.1.5.15.(2) Except as provided in Sentences 3.1.5.15 ...	Alternative
9.10.17.10.(1)(a) by one of the interior finishes describe ...	Alternative
9.25.2.3.(7) Insulation located in areas where it may ...	Alternative
9.29.4. Plastering	Alternative
9.29.5. Gypsum Board Finish (Taped Joints)	Alternative
9.29.5.2. Materials	Alternative
9.29.6. Plywood Finish	Alternative
9.29.7. Hardboard Finish	Alternative
9.29.8. Insulating Fibreboard Finish	Alternative
9.29.9. Particleboard, OSB or Waferboard Finish	Alternative

National Building Code of Canada 2020

Code provision	Solution type
3.1.4.2.(1)(a) by one of the interior finishes describe ...	Alternative
3.1.5.15.(2) Except as provided in Sentences 3.1.5.15 ...	Alternative
9.10.17.10.(1)(a) by one of the interior finishes describe ...	Alternative
9.25.2.3.(7) Insulation located in areas where it may ...	Alternative
9.29.4. Plastering	Alternative
9.29.5. Gypsum Board Finish (Taped Joints)	Alternative
9.29.5.2. Materials	Alternative
9.29.6. Plywood Finish	Alternative
9.29.7. Hardboard Finish	Alternative

Code provision	Solution type
9.29.8. Insulating Fibreboard Finish	Alternative
9.29.9. Particleboard, OSB or Waferboard Finish	Alternative

The above opinion(s) is/are 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

DC315

Product description

The product is a liquid-applied coating that expands (intumesces) on exposure to fire, providing thermal protection for the substrate. It is delivered in pails (which must bear the CCMC number 14036-R) and is sprayed-applied in the field by installers licensed by International Fireproof Technology Inc. (IFTI).



Figure 1. Product (white coating) applied over wood stud cavities filled with medium density spray foam

Manufacturing plants

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

Product name	Manufacturing plants	
	Irvine, CA, US	Taoyuan, Republic of China
DC315	✓	✓

✓ 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.

- DC315 may serve as a thermal barrier over any CAN/ULC-S705.1-compliant medium density spray-applied polyurethane foam insulation in Part 9 and Part 3 buildings as outlined below.
- Based on the desired performance acceptable to the local authority having jurisdiction, DC315 must be installed with the following thickness:

Desired performance level	Installed wet film thickness
Equivalence to minimum Part 9 acceptable solution materials (fibreboard, OSB, plywood, particleboard)	20 mils
Equivalence to 12.7 mm gypsum acceptable solution	24 mils
Equivalence to CAN/ULC-S124 Classification B	24 mils

- The exposed portion of wall studs or ceiling joists must also be protected by DC315 when required by the local authority having jurisdiction.
- The installation of DC315 must 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 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-TG-099648-20	CCMC Technical Guide for Intumescent Coatings as a Thermal Barrier over Spray Urethane Insulation

Summary

The CCMC evaluation of this product consisted of the following aspects, and has demonstrated that DC315 meets or exceeds the level of performance required by the code-prescribed acceptable solutions as an alternative solution.

Table 1. Summary

	Benchmark	Minimum performance	Performance of DC315
Thermal barrier performance (Part 3 acceptable solution)	12.7 mm gypsum board	ULC-9705 full-scale room fire test duration ≥ 20:00	20:00 at 24 mils wet film thickness
Thermal barrier performance (CAN/ULC-S124 equivalence)	CAN/ULC-S124 compliant material	ULC-9705 full-scale room fire test duration ≥ 14:10	
Thermal barrier performance (Part 9 acceptable solution)	Insulating fibreboard	ULC-9705 full-scale room fire test duration ≥ 00:59	11:00 at 20 mils wet film thickness
Physical properties (basic coating properties)	-	Meets basic code-reference coating properties	Meets
Physical properties (Canadian Consumer Product Safety Act)	-	Meets tested Health Canada CCPSA requirements	Meets
Resistance to mechanical damage (concentrated load)	12.7 mm gypsum board	≥ 183 lbf	376 lbf
Resistance to mechanical damage (falling ball impact)	12.7 mm gypsum board	≥ 42 in.	43 in.
Resistance to deterioration (durability)	-	Meets acceptable adhesion, moisture and fungi resistance	Meets

Detailed technical information

Thermal barrier performance

Summary

In order to establish that DC315 provides equal or better thermal barrier performance when compared to relevant acceptable solutions full-scale room fire testing (following CAN/ULC-9705) was conducted. Full-scale room fire tests

were conducted to set the minimum level of performance required by the acceptable solutions given in Part 3 and Part 9. The results are summarized below.

Table 2. Equivalent fire protection established by full-scale room fire testing [1]

NBC prescribed *Acceptable Solution*			CCMC-evaluated DC315 *Alternative Solution*		
Code provision	**Acceptable material**	**Full-scale fire performance (m:ss)**	**Primer**	**DC315**	**Full-scale fire performance (m:ss)**
3.1.5.15.(2)(a)	12.5 mm regular gypsum	20:00	3 mil	24 mil	20:00
3.1.5.15.(2)(b)	Lath and plaster	-			
3.1.5.15.(2)(c)	Masonry	-			
3.1.5.15.(2)(d)	CAN/ULC-S124 compliant thermal barrier	14:10			
9.29.4	Plastering	-		20 mil	11:00
9.29.5	Gypsum board	-			
9.29.6	Plywood	1:18 to 3:03			
9.29.7	Hardboard	-			
9.29.8	Insulating fibreboard	0:59			
9.29.9	Particleboard	2:20 to 2:36			
	Oriented strandboard (OSB)	2:15			
	Waferboard	-			

Note:

1 Fire testing was performed according to CAN/ULC-9705-13(R2018) "Fire tests - Full-scale room test for surface products."

Additional information on CAN/ULC-S124 and -9705

For combustible construction, the NBC requires foamed plastic insulation that forms part of a wall or ceiling assembly to 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 could 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 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 ≥ 1 MW
2. Incident heat flux at the floor ≥ 20 kW/m2
3. Flames through doorway
4. Crumpled paper on floor ignites
5. Average temperature at ceiling in the room exceeds 600ºC

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.

CCMC consultation with Canadian authorities

The CCMC sought the opinion of Canadian provincial and territorial authorities from October 2015 to January 2016 to determine any variation in acceptable solution across jurisdictions related to minimum benchmarks for thermal barrier protection and protection from mechanical damage.

Table 3. Summary of consultation with Canadian authorities (1)

	Thermal barrier benchmark		Protection from mechanical damage	
	Basements	**Attached garages**	**Benchmark protection**	**Required location**
AB	11 mm fibreboard	12.7 mm gypsum board	12.7 mm gypsum	Insulation only (2)
BC	11 mm fibreboard	11 mm fibreboard	Any code-specified panel	Insulation only
MB	11 mm fibreboard	11 mm fibreboard	Any code-specified panel	Insulation only
NB	9.5 mm gypsum board	12.7 mm gypsum board	Any code-specified panel	Insulation only
NL	-	-	-	-
NT	11 mm fibreboard	11 mm fibreboard	9.5 mm gypsum board	Insulation only

	Thermal barrier benchmark		Protection from mechanical damage	
	Basements	Attached garages	Benchmark protection	Required location
NS	11 mm fibreboard	11 mm fibreboard	-	Insulation and studs
NU	11 mm fibreboard	11 mm fibreboard	Any code-specified panel	Insulation only
ON	12.7 mm gypsum board	12.7 mm gypsum board	Any code-specified panel	Insulation only
PE	-	-	-	-
QC	9.5 mm gypsum board	9.5 mm gypsum board	9.5 mm gypsum board	Insulation only
SK	12.7 mm gypsum board	12.7 mm gypsum board	12.7 mm gypsum	Insulation and studs [(3)]
YK	12.7 mm gypsum board	12.7 mm gypsum board	12.7 mm gypsum	Insulation and studs [(3)]

Notes:

1 Provinces or territories not covered are expected to base their decision-making on one of the solutions covered within this matrix.

2 For garage applications, Alberta only recognizes 12.7 mm gypsum board covering the insulation and structural members, with no allowance for alternate thermal barrier performance requirements.

3 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.

Physical properties

Table 4. Material properties

Property	Unit	Test method	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 [(1)]
Phthalates content	ppm	Health Canada Method C34	< 1%	Pass [(2)]

Property	Unit	Test method	Requirement	Result
Volatile organic compound (VOC)	g/l	ASTM D 2369	< 50	47

Notes:

1 The lead content falls under the *Consumer Product Safety Act.* Testing by ITS has confirmed that the DC315 is not classified for WHMIS or for *Consumer Chemicals and Containers Regulations* (CCCR), as DC315 contains no hazardous material in excess of 1%. Chemically, lead is not a component in the DC315 formulation.

2 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 DC315 is not classified under WHMIS or CCCR because the formulation has no hazardous material in excess of 1%. Therefore, phthalates, if present are < 1%.

Table 5. Physical properties

Property	Test method	Unit	Requirement	Result
Flexibility	ASTM D522	-	No cracking or peeling on a 12.5-mm mandrel	Pass
Adhesion to substrate	ASTM D3359, Method A	-	≥ 4A rating	5A
Pull off strength	ASTM D4541	psi	Greater than spray foam	50
Water vapour permeance	ASTM E96/E96M, Proc. A	ng/(Pa·s·m^2)	Report value	977

Resistance to mechanical damage

Table 6. Mechanical testing

	Test method	Unit	Requirement	Result
Concentrated load	ASTM E661 (1)	lbf	≥ 183 (2)	376 (3)
Concentrated load after impact load		lbf	≥ 150 mm impact, 77 lbf load (4)	450 mm impact, 182 lbf load
Falling ball impact	ASTM D5420 (5)	inch	≥ 42 (6)	48

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 Minimum level of required performance based on highest load achieved by 12.7 mm gypsum board.

3 Result of testing 18 mils wet film thickness. 423 lbf achieved with 24 mils wet film thickness.

4 Ultimate load applied following increased impact loading (30 lb. bag at increasing height). A measure of toughness or strength retention after successive impact energy.

5 A 62.5-mm diameter steel ball is dropped at increasing heights in 150 mm intervals.

6 Minimum level of performance based on highest impact energy without exposure of foam behind 12.7 mm gypsum board.

Resistance to deterioration

Table 7. Results of Testing the Material and Environmental Conditioning/Aging of the Product

Property	Test method	Requirement	Result
Adhesion to substrate (resistance to high humidity)	ASTM D 3359, Method A after conditioning	Min. adhesion rating: 4A	5B
Moisture resistance	ASTM D 4585 Moisture Protocol	No blistering, wrinkling or loss of adhesion (Adhesion ASTM D 3359)	Pass
Fungal/mildew resistance	ASTM C1338	No more fungal growth than control specimen	Pass

Additional performance information

Information in this section does not form part of the CCMC's Code compliance opinion. Test reports were reviewed by the CCMC but may not be the most recent information.

Table 8. Performance claims

	Test method	Result
Flame-spread rating (applied over medium density spray foam)	CAN/ULC-S102	25
Flame-spread rating (applied to cement board)	CAN/ULC-S102	0

Administrative information

Use of Canadian Construction Materials Centre (CCMC) assessments

This assessment must be read in the context of the entire CCMC Registry of Product Assessments, any applicable building code or by-law requirements, and/or any other regulatory requirements (for example, the Canada Consumer Product Safety Act, the Canadian Environmental Protection Act, etc.).

It is the responsibility of the user to confirm that the assessment they are using is current and has not been withdrawn or superseded by a later version on the CCMC Registry of Product Assessments.

Disclaimer

The National Research Council of Canada (NRC) has evaluated only the characteristics of the specific product described herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (such as authorities having jurisdiction, design professionals and specifiers). This evaluation is valid when the product is used as part of permitted construction, respecting all conditions and limitations stated in the evaluation, and in accordance with applicable building codes and by-laws.

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Language

Une version française de ce document est disponible.
In the case of any discrepancy between the English and French version of this document, the English version shall prevail.

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

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

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

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

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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 requiredClassification 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/m³	100 mm 38.4 kg/m³
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/m²	< 2 kW/m²	≤ 20 kW/m²	9 kW/m²
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 m²	< 300 m²	≤ 1350 m²	< 800 m²

.

Table 7.2 Test Results of 12.5 mm Regular Gypsum Wallboard[a]

	Classification of 10 min		Classification of 20 min	
	Requirement	Test Result	Requirement	Test Result
Floor level heat flux	≤ 20 kW/m²	< 2 kW/m²	≤ 20 kW/m²	< 8 kW/m²
Average upper layer temperature	≤ 600°C	--	≤ 600°C	--
Heat release rate	≤ 1MW	< 0.2 MW	≤ 1MW	< 0.6 MW
Visible flames exit doorway	No	No	No	No
Total Smoke Released	≤675 m²	< 54 m²	≤ 1350 m²	54 m²

[a]Gypsum wallboard installed as protection over nominally 50 mm thick spray polyurethane foam with a density of 33.6 kg/m³.

Table 7.3 Test Results of DC 315 for Paint Performance Requirements

Property	Test Method	Requirement	Result
Flashpoint (Pensky-Martens closed cup) [°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·m²)

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.

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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

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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 | (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

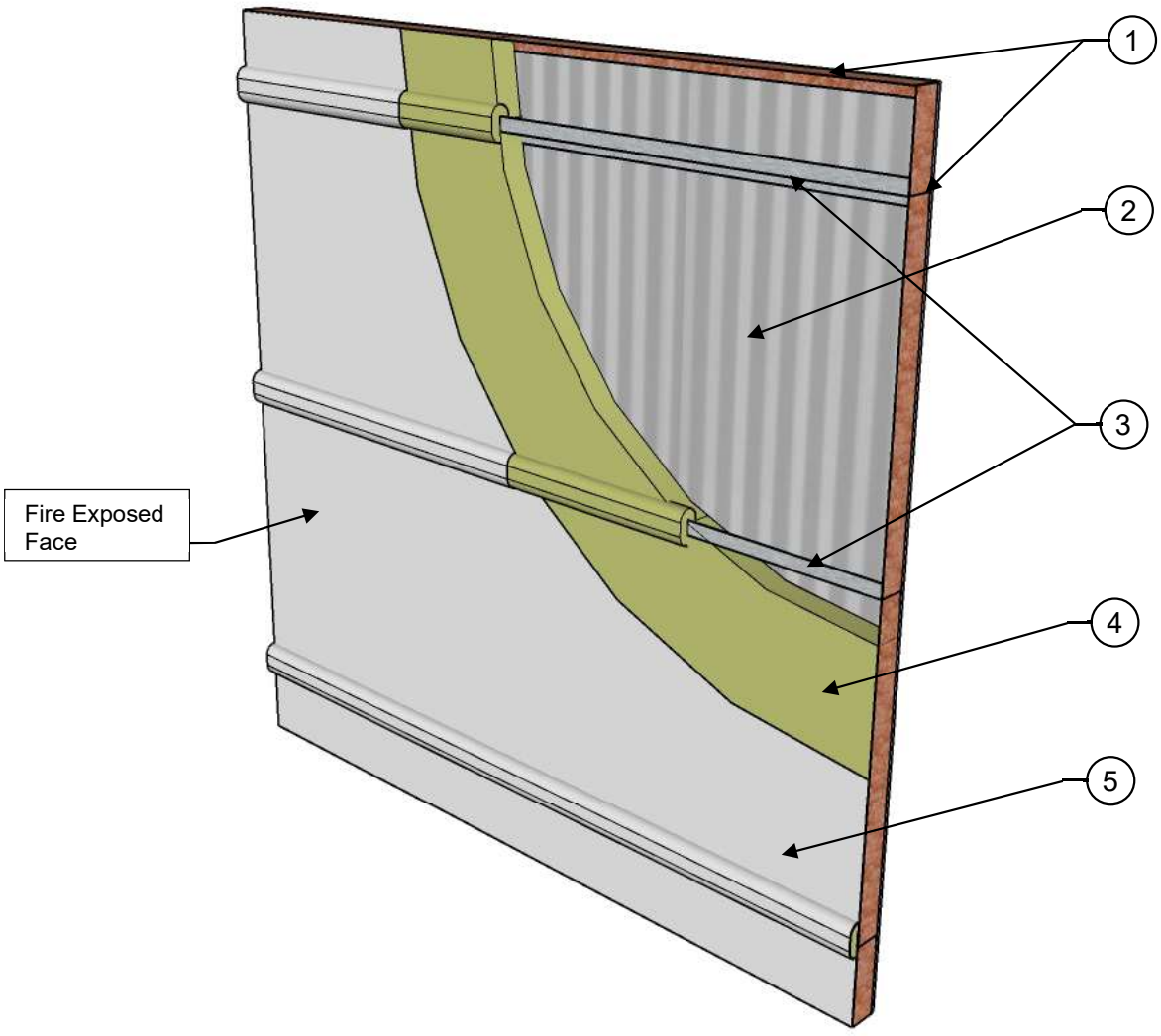
Assembly Rating: 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) where F_{EO} = 0.019,

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



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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^3 (2.0 lbs./ft^3), 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.

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

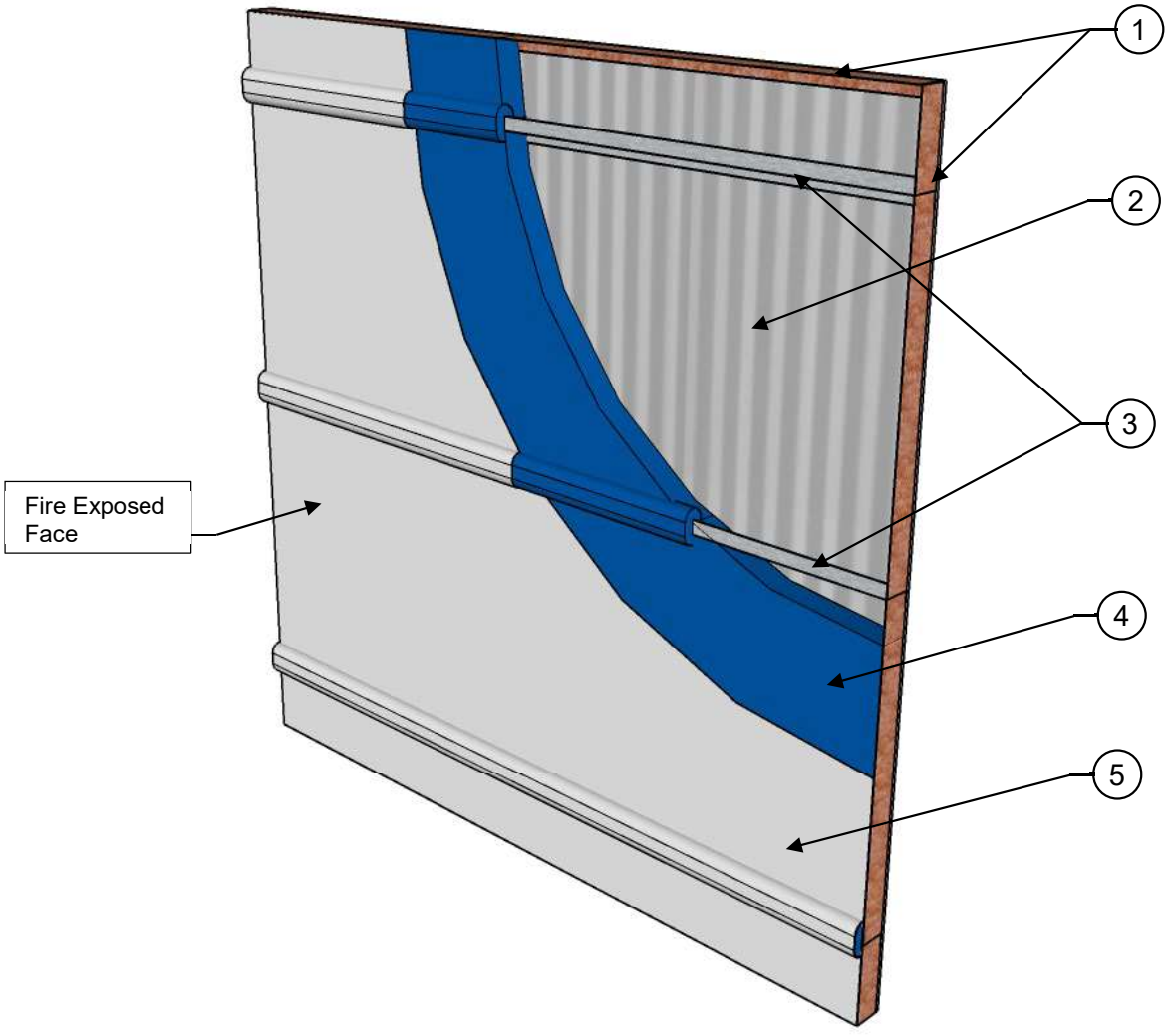
Assembly Rating: 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada®* 2020 and 2015,

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



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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^3 (2.07 lbs./ft^3), 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.

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

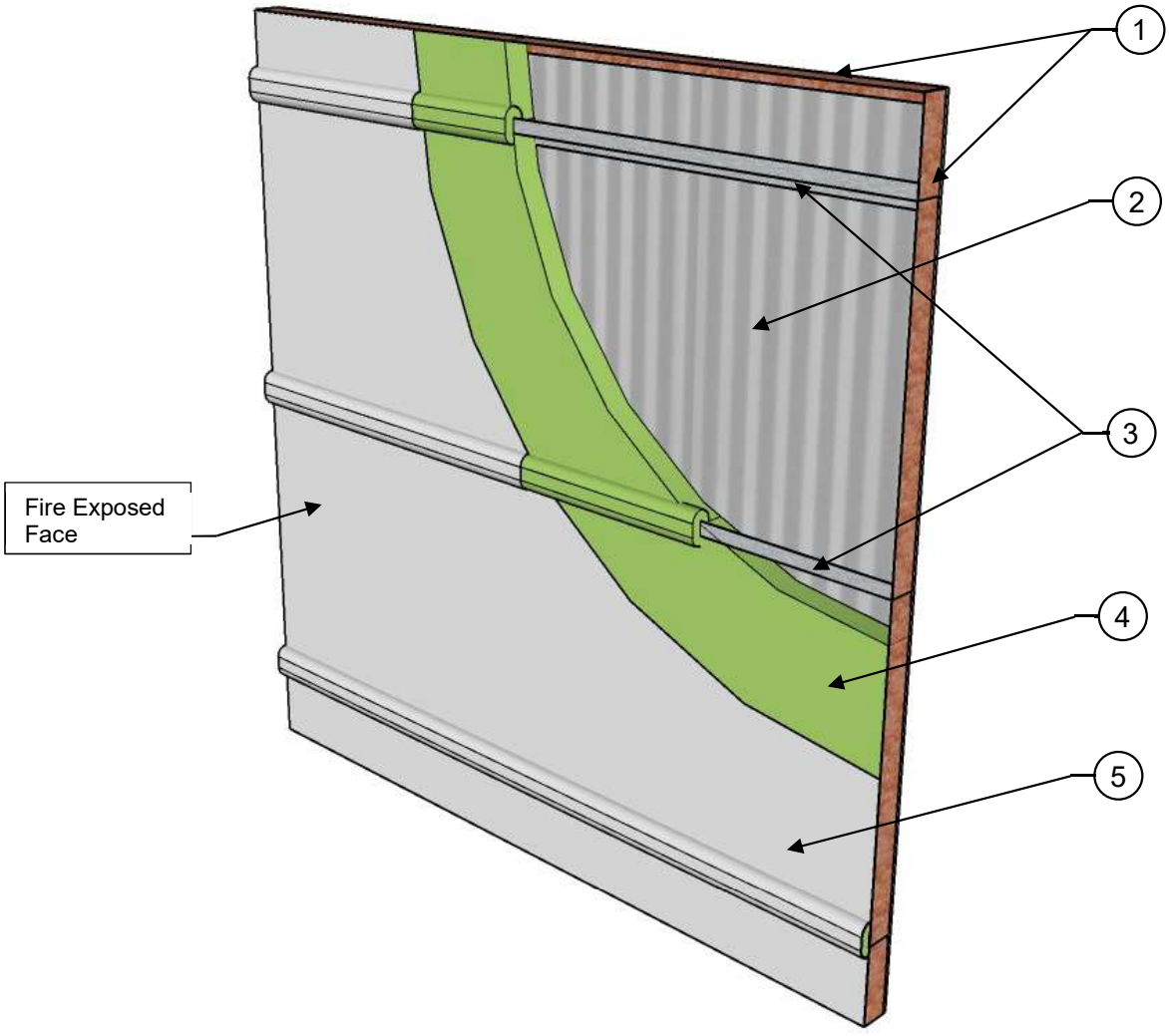
Assembly Rating: 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada®* 2020 and 2015,

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



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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™ One (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 36.84 kg/m^3 (2.30 lbs./ft^3), 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.

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

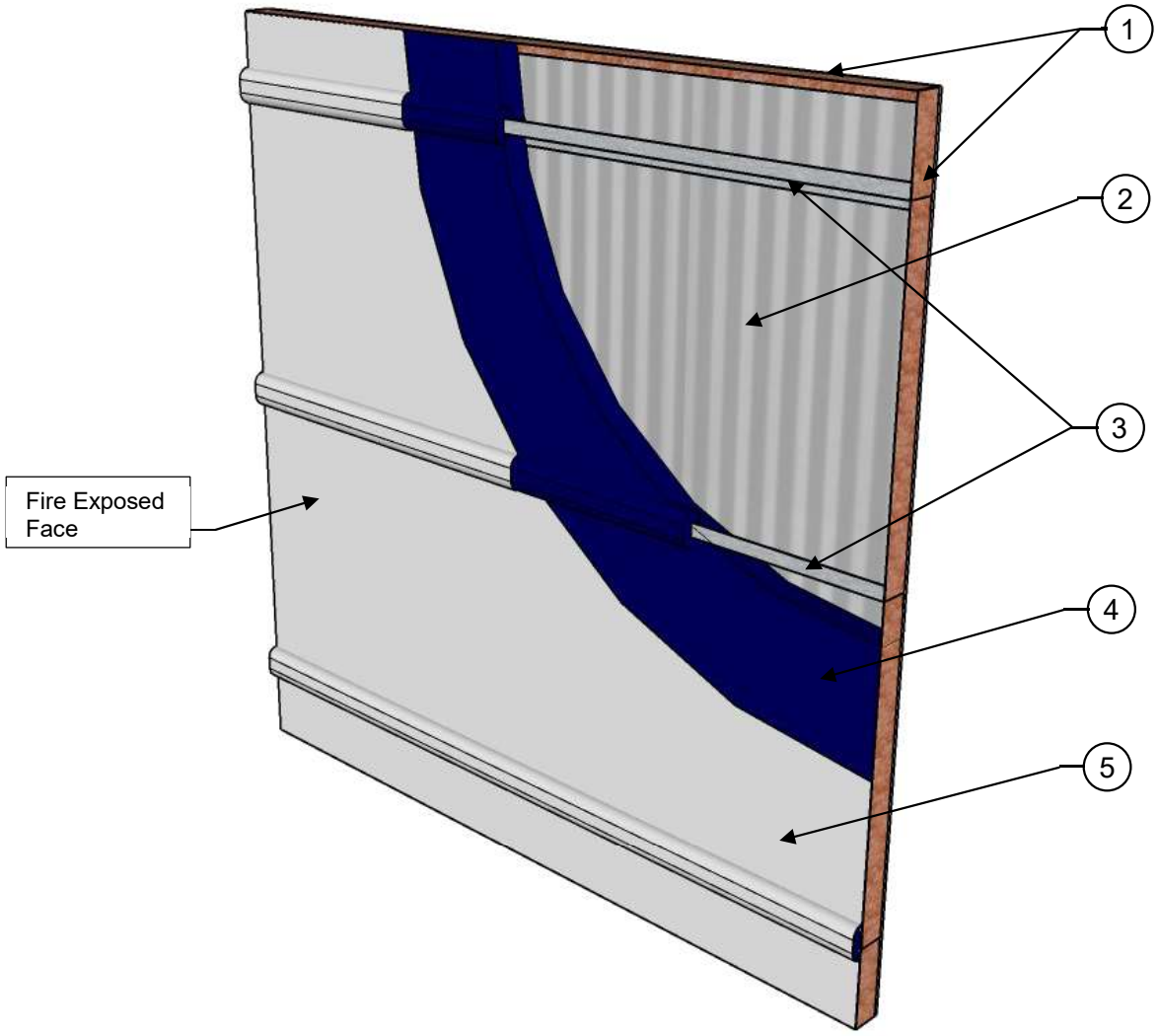
Assembly Rating: 45-minutes from the Fire Exposed Face (Asymmetrical Wall Assembly) in accordance with Section 3.1.7.1. without correction required to Section 3.1.7.2. of Volume 1-Division B of the *National Building Code of Canada®* 2020 and 2015,

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

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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 –** Elastochem Insulthane® Extreme Winter (Closed-Cell) spray-applied polyurethane foam (SPF) insulation, with a reported density of 34.92 kg/m^3 (2.18 lbs./ft^3), 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 MasterFormatTM, SectionFormatTM, and PageFormatTM. It is also written with metric and imperial units of measurement.

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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; as listed in this Specification.
    2. Substitution Limitations: **[No further substitutions are acceptable.] [Conforming to requirements of Section 01 25 00 - Substitution Procedures]**

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:

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.

2. Acceptable Product:
    1. PPG PittTech Plus, Single Component, Enamel
    2. PPG Aquapon WB, Tow Component, Water-Borne Epoxy
    3. Sherwin William A-100
    4. Sherwin Williams Pro Industrial Acrylic
    5. Sherwin Williams Sher-Cryl HPA
    6. Sherwin Williams SteelMaster 9500
    7. 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 spay 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

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.

Phillip J. Smith
VP - Manager of Materials
FM Approvals
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BUILDING PRODUCTS LISTING PROGRAM

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

Class: Applied Fireproofing
Location: Irvine, CA
Website: www.painttoprotect.com

Listing No. B1117
Project No. B1117, Edition 3
Effective Date: Aug 23, 2018
Last Revised Date: May 31, 2024
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.”

CAN/ULC S102 “Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.”

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 International Building Code 2021) 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 International Building Code 2021) 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.

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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 ratings for DC315 evaluated per the noted methods:**

DC315 Intumescent Coating surface burning characteristics per ASTM E84 are outlined below:

PRODUCT	CLASSIFICATION		
	Thickness	Flame Spread Index	Smoke Developed Index
DC315 Intumescent Coating	min. 20 mils Wet Film Thickness (WFT)	≤ 25	≤ 450

DC315 Intumescent Coating surface burning characteristics per CAN/ULC S102 are outlined below:

PRODUCT	CLASSIFICATION		
	Thickness	Flame Spread Classification	Smoke Developed Classification
DC315 Intumescent Coating	min. 12 mils Wet Film Thickness (WFT) over Oriented Strandboard (OSB)	0	25

DC315 Intumescent Coating surface burning characteristics per ASTM E84 Extended 20 minutes (ASTM E2768) are outlined below:

PRODUCT	CLASSIFICATION			
	Thickness	Flame Spread Index	Significant Progressive Combustion	Max Flame Front (ft)
DC315 Intumescent Coating	min. 20 mils Wet Film Thickness (WFT)	≤ 25	No	≤ 10.5

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DC315 CAN/ULC S145 approved room corner assemblies:

Standard	Ratings	Limitations
CAN/ULC S145	20-minute Classification.	DC315 when applied with a 3 WFT primer and a 25 WFT thickness - 20-minute classifications of ULC S145 when applied over thermosetting foam.

DC315 intumescent coating NFPA 286 room corner assemblies:

Standard	Ratings	Limitations
NFPA 286	Complies with section 2603.9 Special Approval of International Building Code (IBC) 2021 for installation without code prescribed thermal barrier.	See current IFTI Code Evaluation Report for required installation details and approved foam plastic types.

DC315 Approved CAN/ULC S101 and ASTM E119 Assemblies:

ASSEMBLY NO.	DESCRIPTION	RATING
1[1,2]	Exterior steel wall assembly constructed of minimum 26-gauge (0.45 mm) thickness fluted steel panels of 36-inches (914 mm) width with 1-1/4 inches (32 mm) depth ribs anchored at the top and bottom of panels wit #8 ½-inches (51 mm length) self-tapping screws at each panel corner. Z-girts of minimum 20-gauge (0.9 mm) thickness of 4-inches (102 mm) depth with 2-inches (51 mm) legs are installed horizontally at 4-foot (spacing, with Z-girts secured with #8 ½-inches (51 mm) length self-drilling screws. Over the fluted steel and between Z-girts, Genyk Boreal Nature Elite closed-cell, medium density spray-applied polyurethane foam insulation (SPF) is applied at a maximum thickness of 4 inches (102 mm) with a maximum density of 2.2 lbs/ft^3 (35 kg/m^3). After curing, the interior surface of Genyk Boreal Nature Elite foam insulation is coated with approximately 34 mils WFT (23 dry film thickness) applied at 2.15 gallons per 100 ft^2 (1.14 m^2/L) DC315 intumescent paint. The above noted assembly complies for use in exterior walls with the following limitations: Where used in jurisdictions governed by the 2020/2015 National Building code of Canada the above-described exterior wall assembly is permitted where: • Limiting distance ≥ 1.2 meters (3.9 ft) and, • A fraction of the exposed building face of the exterior wall assembly is added to the actual area of unprotected openings as 3.3% where 60-minute fire-resistance rating is required, and 1.9% where 45-minute fire resistance rating is required. Where used in jurisdictions governed by the 2018 International Building Code the above-described exterior wall is permitted where:	1-hour non-load bearing.

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	• Where there is no limit to the area of unprotected openings, and the exterior wall requires a 60-minute fire resistance rating or, • Where per 2018 IBC Section 705.8, the fraction of exposing building face of the wall is added to the actual area of unprotected openings of 3.3%. Protection of load-bearing elements of the exterior wall assembly is outside the scope of this report.	
2[1,2]	Exterior steel wall assembly features intermediate supports consisting of 16-gauge (1.519 mm), 4-inch (102 mm) deep Z-girts with 2-inch (51 mm) legs, installed horizontally and spaced 4 feet (1,219 mm) on center. The unexposed face is sheathed with 26-gauge (0.45 mm) fluted steel panels, 36 inches (914 mm) wide with 1-1/4 inch (32 mm) deep ribs, attached to the framing using #12-14 1-1/2 inch (38 mm) long self-drilling screws spaced 12 inches (305 mm) on center horizontally at each intermediate support, and #12 1-inch (25 mm) long self-drilling screws spaced 16 inches (406 mm) on center vertically at the panel overlap seams. The cavity is insulated with Carlisle Spray Foam Insulation's SealTiteTM One spray foam insulation applied at a nominal thickness of 4 inches (102 mm) between the supports and 1-1/2 inches (38 mm) over the Z-girts. The insulation has a maximum density of 2.5 lbs./ft.^{3} (40 kg/m^3) and is coated with approximately 34 mils WFT (0.864 mm) of International Fireproof Technology Inc. DC315 intumescent coating. The above noted assembly complies for use in exterior walls with the following limitations: Where used in jurisdictions governed by the 2020/2015 National Building code of Canada the above-described exterior wall assembly is permitted where: • Limiting distance ≥ 1.2 meters (3.9 ft) and, • A fraction of the exposed building face of the exterior wall assembly is added to the actual area of unprotected openings as 1.8% where 60-minute fire-resistance rating is required, while no adjustment is needed for a 45-minute rating. Where used in jurisdictions governed by the 2018 International Building Code the above-described exterior wall is permitted where: • Where there is no limit to the area of unprotected openings, and the exterior wall requires a 60-minute fire resistance rating or, • Where per 2018 IBC Section 705.8, the fraction of exposing building face of the wall is added to the actual area of unprotected openings of 1.8%. Protection of load-bearing elements of the exterior wall assembly is outside the scope of this report.	1-hour non-load bearing.

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3[1,2]	Exterior steel wall assembly features intermediate supports consisting of 16-gauge (1.519 mm), 4-inch (102 mm) deep Z-girts with 2-inch (51 mm) legs, installed horizontally and spaced 4 feet (1,219 mm) on center. The unexposed face is sheathed with 26-gauge (0.45 mm) fluted steel panels, 36 inches (914 mm) wide with 1-1/4 inch (32 mm) deep ribs, attached to the framing using #12-14 1-1/2 inch (38 mm) long self-drilling external Hex Washer head screws spaced 12 inches (305 mm) on center horizontally at each intermediate support, and #12 1-inch (25 mm) long self-drilling external Hex Washer head screws spaced 16 inches (406 mm) on center vertically at the panel overlap seams. The cavity is insulated with Elastochem Specialty Chemical, Inc.'s Insulthane® Extreme Winter spray foam insulation (SPF) applied at a nominal thickness of 4 inches (102 mm) between the supports and 1-1/2 inches (38 mm) over the Z-girts. The insulation has a nominal density of 2.2 lbs./ft.^{3} (35 kg/m^3) and is coated with approximately 34 mils WFT (0.864 mm) of International Fireproof Technology Inc. DC315 intumescent coating. The above noted assembly complies for use in exterior walls with the following limitations: Where used in jurisdictions governed by the 2020/2015 National Building code of Canada the above-described exterior wall assembly is permitted where: • Limiting distance ≥ 1.2 meters (3.9 ft) and, • A fraction of the exposed building face of the exterior wall assembly is added to the actual area of unprotected openings as 0.9% where 60-minute fire-resistance rating is required, while no adjustment is needed for a 45-minute rating. Where used in jurisdictions governed by the 2018 International Building Code the above-described exterior wall is permitted where: • Where there is no limit to the area of unprotected openings, and the exterior wall requires a 60-minute fire resistance rating or, • Where per 2018 IBC Section 705.8, the fraction of exposing building face of the wall is added to the actual area of unprotected openings of 0.9%. Protection of load-bearing elements of the exterior wall assembly is outside the scope of this report.	1-hour non-load bearing.
4	The wall assembly comprises ½ inch (12.7mm) thick approved Type C gypsum wallboard fastened to one side of nominal 2-inch by 4-inch studs located 16 inches on center using 1-1/4 inches (31.75 mm) drywall screws spaced 8 inches (203.2mm) on center. Inside the cavity, LaPolla Industries Foam-Lok spray foam insulation or equivalent is applied to an average thickness of 3-1/2 (88.9mm) inches. The exterior surface is coated with DC315 intumescent paint applied to a wet film thickness (WFT) of 18 mils in total, providing fire protection and insulation for the assembly.	25 minutes non-load bearing.

Note 1: Exterior wall assembly complies with the 2020 National Building Code of Canada Section 3.1.7.2 where installed with limitations noted.
Note 2: Exterior wall assembly complies with Section 705.7 of the 2021 International Building Code (IBC) where installed with limitations noted.

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Self-Declared Certificate of Product Conformity VOC Emissions

Company Information

Company Name:	**International Fireproof Technology Inc**
Contact Information:	**949-975-8588**
Website:	**www.painttoprotect.com**

Product Information

Product Name:	**DC315**
Product Numbers[1]:	**DC315-IG, DC315-W, DC315-DG, DC315-BK**

[1]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**

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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/m²:	**876 g/m2**
TVOC concentration at 14-days:	**Less or equal to 0.5 mg/m3**
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**

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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**

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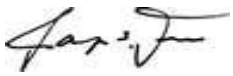
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COMPLIANCE TESTED by berkeley analytical

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:	May 5, 2026

Certificate Information	
Certificate No:	260529-03
Certified By:	
	Raja S. Tannous, Laboratory Director
Date:	May 29, 2026

Reference Standard & Modeling Scenario: 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[1]	Individual VOCs of Concern[2]		Formaldehyde[3]		TVOC[4]
	Criterion	Compliant?	Criterion	Compliant?	Range
School Classroom	≤½ Chronic REL	YES	≤9.0 µg/m³	YES	≤ 0.5 mg/m³
Private Office	≤½ Chronic REL	YES	≤9.0 µg/m³	YES	≤ 0.5 mg/m³

Sample Coverage[5]: 793 g/m²

1. Exposure scenarios and product quantities for classroom & office are defined in Tables 4-2 – 4-5 (CDPH Standard Method 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/m³, effective January 1, 2012; previous limit was ≤16.5 µg/m³ (*ibid*.)
4. Informative only; predicted TVOC Range in three categories: ≤0.5 mg/m³, >0.5 – 4.9 mg/m³, and ≥5.0 mg/m³
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 water-based intumescent coating product and submitted it on May 7, 2026 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, 469-007-01A-May2926.

Berkeley Analytical is an independent testing 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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SAFETY DATA SHEET

1. Identification

Product identifier	**TB315-W - DC315 WHITE**
Other means of identification	
Product code	TB315-W
Recommended use	Intumescent Fire Resistant Coating
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Company name	International Fireproof Technology, Inc. 17528 Von Karman Ave. Irvine CA 92614
Email	ptp@painttoprotect.com
Telephone Number	1-949-975-8588
Contact person	SDS request
Emergency telephone number	CHEMTREC 1-703-741-5970 / 1-800-424-9300

2. Hazard identification

Physical hazards	Not classified.
Health hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

The components are not hazardous or are below required disclosure limits.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed such as: Carbon oxides (COx). Nitrogen Oxides (NOx). Hydrogen cyanide.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	This product is miscible in water. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid prolonged exposure. Provide adequate ventilation. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	It is a good industrial hygiene practice to minimise skin contact. For prolonged or repeated skin contact use suitable protective gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid.

Colour	White
Odour	Not available.
Odour threshold	Not available.
pH	7 ±1.0
Melting point/freezing point	Not available.
Initial boiling point and boiling range	> 100 °C (> 212 °F)
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit – upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	1.35 ±0.1
Solubility(ies)	
Solubility (water)	Miscible (water)
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	8000 - 20000 cps
Other information	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
VOC	<= 50 g/l

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Peroxides. Phenols.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No inhalation hazard under normal conditions. Inhalation of titanium dioxide dust may cause cancer, however due to the physical form of the product, inhalation of dust is not likely.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitisation	
Respiratory sensitisation	Not a respiratory sensitiser.
Skin sensitisation	This product is not expected to cause skin sensitisation.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Due to the form of the product, exposure to the potentially carcinogenic components is not expected. Titanium dioxide is considered carcinogenic only when in an inhalable powdered form.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	None known.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	This product is miscible in water.
Other adverse effects	The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information

Canadian regulations	This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

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