



DC 315: 15 Minute Thermal & Ignition Barrier on Spray Polyurethane Foam (SPF) Data Sheet and Application Guide



[DC 315 is AC456 compliant \(Click here for report\)](#). DC 315 applied over Spray Polyurethane Foam (SPF), is an IBC & IRC Code Complaint Alternative Thermal Barrier System. To be approved as an Alternative Barrier System, DC 315 is applied over a manufacturer's SPF and tested to the criteria of an NFPA 286, UL 1715, UL 1040, or FM 4880 for duration of 15 minutes by an accredited fire testing facility. Products that pass an ignition barrier tested under **AC 377 Appendix X** are not appropriate alternative thermal barriers and cannot be used. Depending on your particular application, either ignition or thermal barriers are required by the International Building Code (IBC).

Characteristics

- Color:** All orders ship in Light Gray (White and Dark Gray available via special order)
- V.O.C.:** (47 g/l)
- Volume Solids:** 67%
- Packaging:** 5 & 55 gallon containers



DC315 tested solutions for the Spray Polyurethane Foam

- More full scale Thermal and Ignition Barrier tests than any other product in the world
- DC 315 - 3rd. party inspected for Quality Control: Warnock Hersey Intertek W/N 20947
- Tested useful life, fire resistant property is not compromised after 50 years
- Top coat for color, weather & moisture protection, tested, via NFPA 286 full scale testing
- ANSI 51 testing for incidental food contact
- Passed CAL 1350 - qualify DC 315 as a low-emitting material in the Collaborative for High Performance Schools rating system (CHPS Designed & CHPS Verified)
- Passed strict EPA – V.O.C. and AQMD air emission requirements (for all 50 states)
- 3rd Party tested "Single Coat Coverage" up to 24 Mils WFT, on ceilings and walls, reducing labor costs equaling higher profits
- Meets Life Safety Code 101
- Meets LEED's point requirements
- No formaldehyde

DC 315 is the most tested and approved product in the world for use as an, "Alternative Thermal Barrier Coating System" over Spray Polyurethane Foam (SPF).

Visit us at our website www.painttoprotect.com to obtain a current matrix of all the manufacturer's foams DC 315 has been tested and approved over as Thermal or Ignition barriers in compliance with current IBC codes.

If a coating has not passed a full scale test on a manufacturer's foam it cannot be used on that foam; there are no exceptions in the IBC Code!

Building Code Fire Performance Requirements for SPF:

The International Building Code (IBC) mandates that SPF be separated from the interior of the building by a 15 minute thermal barrier, or other approved covering. DC 315 passed certified NFPA 286 and UL 1715 test over a variety of open and closed cell spray applied urethane foams that were conducted by ISA certified testing facilities. All tests performed comply with the requirements of 2006 IBC Section 803.2.1 & 2009 IBC Section 803.1.2, and Section 2603.9; 2012 IBC Section 803.1.2 and Section 2603.10 & 2015 IBC Section 803.2.1 and IBC Section 2603.9 under "Special Approvals for Thermal Barriers over Foam Plastics". DC315 is WHI marked and certified via 3rd party inspection for quality assurance and consistency.

Special Approval / Alternate Thermal & Ignition Barrier Assemblies

Alternative 15 min Thermal Barrier Assemblies (e.g. Exposed SPF or SPF with a Thermal Barrier Protective Covering)

The assembly must remain in place for 15 minutes during specified large-scale fire tests, such as NFPA 286, UL 1715, UL 1040, or FM 4880.

Alternative Ignition Barrier Assemblies

DC 315 meets the requirements for ignition barrier per **AC 377, Appendix X**

In order to validate warranty and confirm the installation complies with IFTI's best practices installer must obtain and read all current installation documents. Installation documents include Application Guide, Ventilation Guide and Job Work Report. These documents can be downloaded at www.painttoprotect.com or by calling IFTI at 949.975.8588. "Job Work Records 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 is able to provide documented proof of the installation, for this reason IFTI recommends using these forms for all thermal barrier jobs."

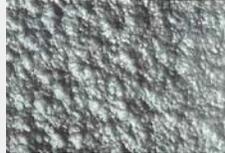
Uses: DC315 is designed as an interior thermal and ignition barrier coating to protect SPF from the interior conditioned space of a building. Contact IFTI for instruction for using DC315 in other applications. i.e. cold storage, high humidity, buildings without HVAC or left exposed to the environment.

Prior to Applying DC 315 to Ensure Proper Adhesion: Adhesion of a coating to SPF requires the foam surface to have a slight profile or texture similar to an orange peel (view below). Smooth or glossy foam surfaces should be flash coated with a light 3 - 4 mils Wet Film Thickness (WFT) of DC 315 before applying the full application. Flash coating is a quick burst of DC 315 or a primer via airless sprayer over an area needing treatment. We also recommend flash coating around all pipes and air ducts.



Orange Peel Surface Texture

Description: The surface shows a fine texture and is compared to the exterior skin of an orange. This surface is considered acceptable for receiving a protective coating.



Coarse Orange Peel Surface Texture

Description: The surface shows a texture where nodules and valleys are approximately the same size and shape. This surface is acceptable for receiving a protective coating because of the roundness of the nodules and valleys.



Smooth Surface Texture

Description: The surface shows spray undulation and is ideal for receiving a protective coating.

Wait minimum of one hour after spraying SPF before applying DC 315:

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. Our coating 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: DC 315 must be thoroughly mixed before application. Failure to do so will seriously compromise the coating's ability to perform. It is recommended to perform mechanical stirring with a high 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. Thinning is usually not needed. If DC 315 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, add enough water to bring the level back up to within 3 inches from the top in order to ensure proper consistency.

DC 315 Viscosity: DC 315 is a 9,000-10,000 viscosity coating at 75°F. When you open a container of DC 315 it may appear thick before it is mixed, ensure proper temperature and remix for 5 minutes to return it to the 9000-10,000 viscosity.

Temperature: PROTECT FROM FREEZING DURING SHIPMENT, STORAGE AND USE. DC 315 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 DC 315 when ambient air and substrate temperatures fall below 50° F. Store DC 315 at 50° F to 80° F at all times. **Do Not** store DC 315 on concrete floors during winter months. **IFTI recommends an ideal installation temperature range of 62°F to 90°F. Contact IFTI outside ideal temperature ranges.**

Humidity: Relative humidity like temperature plays an equally important role in how well DC 315 cures. **Ideal conditions are 50-65% relative humidity.** Curing times are significantly affected when humidity levels exceed 70%. Low relative humidity can also be a problem, because DC 315 may dry too quickly and lead to blistering on the surface. 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 as the coating cures until equilibrium is achieved. For additional information on using DC 315 in high or low humidity contact IFTI at 949.975.8588 or email us at ptp@painttoprotect.com.

Ventilation: Please see humidity and temperature guidelines above. We recommend running fans to circulate the air during application, especially in high or low humidity. Air flows must be across the area DC 315 was applied, but not directly on it. If the relative humidity is greater than 65% **at the end** of spraying and cross ventilation is not drastically reducing it, then a mechanical industrial dehumidifier is required. **IMPORTANT-** when spraying in enclosed spaces, particularly those that have just been insulated with an air barrier material like SPF, it is mandatory to use an "exhaust" blower at one end of the enclosed space and run a hose to the exterior of the building for removing stale air. Use 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 following application until coating has fully cured. **Improper installation practices that do not address humidity will void the warranty.** Contact IFTI at 949.975.8588 or email ptp@painttoprotect.com

Application Equipment: DC 315 is best applied with an airless sprayer to achieve a more consistent mil thickness. In challenging areas where an airless sprayer is not practical, DC 315 can be applied by brush or roller (See pg. 4 for a list of recommended sprayers).

Spraying DC 315 for Maximum Yield: If this is the first time using DC 315 we suggest testing a pre-measured area to get a feel for spraying and yield. Example, if the job requires 20 wet mils or 80 sq. ft. per gallon, then a 5 gallon pail would cover 400 sq. ft. Measure out one or two 400 sq. ft. sections using pieces of tape, thumbtacks, or canned spray paint. Use just enough to outline the area you intend to apply DC 315. We suggest spraying inside the outlined area and taking wet film thickness measurements, with a wet film gauge across the area, to get a feel for maximum yield.

Coverage: DC 315 MUST BE THOROUGHLY MIXED FOR 5 MINUTES PRIOR TO APPLICATION WITH A MECHANICAL MIXER

Check appropriate test report or ESR for required wet film thickness (WFT) and gallon per square coverage.

WET Film Thickness	Sq. Ft. Per OneGallon	Sq. Ft. Per FiveGallon
4 WFT	400 Sq. Ft. Per One Gallon	2000 Sq. Ft. Per Five Gallon
18 WFT	89 Sq. Ft. Per OneGallon	445 Sq. Ft. Per FiveGallon
20 WFT	80 Sq. Ft. Per OneGallon	400 Sq. Ft. Per FiveGallon
21 WFT	76 Sq. Ft. Per OneGallon	380 Sq. Ft. Per FiveGallon
22 WFT	73 Sq. Ft. Per OneGallon	365 Sq. Ft. Per FiveGallon

Overlapping Technique: The overlapping technique ensures 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 contour of SPF we suggest spraying side to side followed by an up and down stroke.

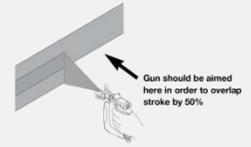


Figure 1

Measuring Wet Film Thickness(WFT)

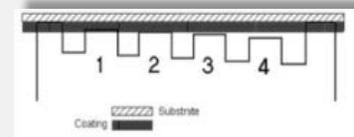


Figure 2

How to Use a Wet Film Thickness Gauge: A WFT gauge is designed to give the spray applicator immediate mil measurement of the film build just been sprayed. There are several types of WFT gauges available. The most common is the notch gauge (see figure 1). Other types of gauges available from specialty vendors include the eccentric disk, rolling notch, and the 6 sided.

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. International Fireproof Technology, Inc. (IFTI) suggests placing metal plates throughout the surface of the foam, or at least one per 400 sq. ft. 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 and keep them on file at the job site. They are a great tool to present your code official or FireMarshal.



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 notch is dry, then the wet measured thickness is 18 mils.



Health and Safety

General Safety, Toxicity, Health Data

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

WARNING: Do not allow product to freeze. Store above 10°C (50°F) at all times.

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 of the exposed skin area as possible with appropriate clothing.

RESPIRATORY PROTECTION is MANDATORY!

Respiratory protective equipment, impervious foot wear 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 protective measures are necessary.

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

Recommended Sprayers for DC315:

For Residential and Warehouse usage:

Small Size Jobs Less than 7,500 Square Feet:

Pump: Titan 640 Impact or equivalent
Hose: 3/8" diameter airless spray line for the first 100' from pump and 1/4" x 6' whip
Tip: 517 – 521
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Medium Size Jobs:

Pump: Titan 840 Impact or (Graco) Ultra Max II 795 Hi-Boy or equivalent
Hose: 3/8" diameter airless spray line for the first 100' from pump and 1/4" x 6' whip
Tip: 517 – 523
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Large Size Jobs:

Airless sprayer: With capability of 1.3 gallon per minute or more. Heavy Duty Fluid Section with high viscosity fluid passages.

Pump: (Titan) 1140 Impact or (Graco) Mark IV-Mark V- Mark X- 220-240 volt offering or equivalent
Hose: 3/8" diameter airless spray line for the first 100' from pump and 1/4" x 6' whip
Tip: 517 – 525
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Gas Airless: Or equivalent

Pump: (Graco) 7900HD 2 gallon per minute
Hose: Max hose length 250 feet (250 feet 3/8 hose, 1/4 whip, HD Blue Gun)
Tip: 517 – 525
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Pump: (Graco) GH 833 4 gallon per minute 4000 psi
Hose: Max hose length 300 feet (1/2 inch 250 feet, 3/8 50ft, 1/4 whip hose, HD Blue Gun)
Tip: 517 – 525
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Pump: (Graco) GH 733 4 gallon per minute 4000 psi
Hose: Max hose length 300 feet (1/2 inch 250 feet, 3/8 50ft, 1/4 whip hose, HD Blue Gun)
Tip: 517 – 525
Mesh: 30

DC 315 may not exceed 24 Mils WFT in one coat.

Material must be applied at a maximum 24 wet Mils (WFT) in one coat

Tip size recommendation: .017-.025 @ 12 inches from substrate

Pressure recommendation: 3000psi

Surfaces should be sprayed with a 50% over lap spraying side to side followed by an up and down stroke.

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Rev:7/24/2015 11:38 PM



Code Compliance Research Report

Subject: International Fireproof Technology, Inc. (IFTI)
DC315 Fire Protective Coating

Date: October 20, 2015

Materials: DC315. Single-component, water-based fire protective coating for use over spray-applied polyurethane foam plastic insulation.

Test Standards:

<u>Property</u>	<u>Standard</u>
Solids Content by Volume	ASTM D2697
Density	ASTM D1475
Viscosity	ASTM D2196

Building Codes and Code References:

1. 2006, 2009, 2012, 2015 International Building Code (IBC)
2. 2006, 2009, 2012, 2015 International Residential Code (IRC)
3. AC456 Acceptance Criteria for Fire-Protective Coatings Applied to Spray-Applied Foam Plastic Insulation Installed without a Code-Prescribed Thermal Barrier, as approved by ICC-ES Committee, 10/2015.
4. AC377 Acceptance Criteria for Spray-Applied Foam Plastic Insulation, 5/2015.

Summary:

1. Based on the test data submitted and the reference documents, DC315 fire protective coating meets the requirements and intent of AC456. When used and tested as a component as part of an assembly with specific spray polyurethane foam (SPF) systems, that assembly does not require the thermal barrier specified in IBC Section 2603.2, IRC Section R326.4 or AC377 Section 3.2.3.2.
2. Specific DC315 / SPF assemblies, including minimum DC315 thicknesses and maximum SPF thicknesses, may be found in individual SPF evaluation reports based on AC377.

Labeling Requirements:

Containers of DC315 must be identified with the manufacturer's name (IFTI), address and telephone number; the name of the insulation product (DC315); date of manufacture; shelf life or expiration date; storage conditions; application instructions; and the name of the third-party inspection agency.

Discussion:

- 1. Specific Spray Foam Systems:** DC315 is tested with specific spray polyurethane foam (SPF) systems as specific assemblies. DC315 application thickness will vary from one SPF to another. Fire test methods and test report requirements are provided in AC377. Recognition for specific assemblies with limits on DC315 and SPF thicknesses can be found in individual SPF evaluation reports based on AC377.
- 2. Per Cent Solids by Volume:** For DC315, the per cent solids by volume (vol%) is 67%.
- 3. Dry Film Thickness, Wet Film Thickness and Theoretical Application Rate:** Thicknesses and theoretical application rates for DC315 may be determined from the thicknesses reported in the respective fire test reports and the formulas listed in AC456, Appendix A. Based on a vol% content of 67%, Table 1 relates these relationships.

Table 1: Film Thicknesses and Theoretical Application Rates

WFT Wet Film Thickness (mils)	DFT Dry Film Thickness (mils)	TAR Theoretical Application Rate (gallons / 100 ft ²)
18	12.0	1.13
19	12.7	1.19
20	13.4	1.25
21	14.1	1.31
22	14.7	1.38

- 4. Adjustments to Theoretical Application Rates (TAR):** Due to job conditions, TARs must be adjusted upward for estimating and application purposes. Factors that affect these adjustments include SPF surface texture, overspray, and miscellaneous losses (such as spills, material left in hoses or on brushes, etc). Refer to SPFA-121 “Spray Polyurethane Foam Estimating Reference Guide” for specific determination methods.
- 5. Installation Instructions:** Specific installation instructions may be found in the DC 315 Data Sheet and Application Guide.
- a. Surface inspection and preparation: All surfaces to be coated must be clean, cured, firm, dry and free of dust, dirt, oil, wax, grease, mildew and efflorescence. Inspect and clean surfaces as required. Some SPF assemblies require the use of a primer (see individual SPF evaluation reports for details).
 - b. Equipment and Settings: DC315 may be applied using airless spray equipment, brush or roller. See DC 315 Data Sheet and Application Guide for specific equipment recommendations and settings.

- c. Application Conditions: Apply DC315 when ambient temperature is between 50 and 90°F and relative humidity is between 50 and 75%.
- d. Storage Conditions / Shelf Life: Do not store DC315 below 50°F. Shelf life of DC315 is one year from date of manufacture when stored in unopened containers between 50 and 80°F.
- e. Mixing: DC315 must be mixed prior to application. Use a high-speed drill with a mixer sized for the specific container. Container contents should be stirred from the bottom up. Five-gallon pails should be mixed 4-5 minutes. See DC 315 Data Sheet and Application Guide for additional information.
- f. Multiple Coats: Maximum application thickness of DC315 in one coat is 24 mils WFT for both vertical and horizontal (overhead) applications. Allow two hours between multiple coating applications.

6. Fire Tests and Recognized Assemblies: Fire tests for recognizing DC315 / SPF assemblies are specified in AC377 with NFPA 286 being the more common. Specific assemblies with minimum DC315 thicknesses and maximum SPF thicknesses may be found in individual SPF evaluation reports.

7. Quality Control: DC315 is manufactured under a quality control program supervised and inspected by Warnock Hersey/Intertek.

Conclusions:

DC315 fire protective coating meets the requirements and intent of the IBC and IRC, in combination with tested SPF systems, as alternate assemblies to the use of thermal barriers as specified and as limited in the Summary section above.

Respectfully submitted,
Deer Ridge Consulting, Inc.



Roger V. Morrison, PE, RRC
President

Reference Documents:

1. 2006, 2009, 2012 and 2015 International Building Code: Sections 803.1.2.1; 2603.
2. 2006, 2009, 2012 and 2015 International Residential Code: Sections R302.9.4; R316.
3. AC456 Acceptance Criteria for Fire-Protective Coatings Applied to Spray-Applied Foam Plastic Insulation Installed without a Code-Prescribed Thermal Barrier, as approved by ICC-ES Committee, 10/2015.
4. AC377 Acceptance Criteria for Spray-Applied Foam Plastic Insulation, 5/2015.
5. DC 315 Data Sheet and Application Guide.
6. SPFA-121 "Spray Polyurethane Foam Estimating Reference Guide."
7. PRI Construction Materials Technologies, Test Report No. CAW-002-02-01, March 24, 2015 (Percent Solids by Volume).