Distributed by RDR Technologies, LLC
835 SE 30th, Suite C .. Oklahoma City OK 73129
405-702-0055 .. rdrtechnologies.com

DC315 Polyurethane Foam (SPF)

Description

DC315 is **a high performance** intumescent coating for Spray Polyurethane Foam (SPF) and provides **a fire protective barrier to delay the involvement of the foam in a fire.** Fully tested and compliant in the **USA, Canada, EU Nations, Australia** and many other **jurisdictions**, DC315 is the most tested and approved alternative thermal barrier on the market today!

DC 315 is applied over a manufacturer's SPF and tested to the criteria of NFPA 286, UL 1715 or ISO-CAN/ULC 9705 for duration of 15-20 minutes by an accredited fire testing facility. DC 315 has also been tested as an ignition barrier under **AC 377 Appendix X**. 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 International model building codes.

DC315 Tested Solutions for 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 Col-laborative 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

*End Use Applications: DC315 is for interior use as a thermal or ignition barrier coating to protect SPF. Contact IFTI for instruction for using DC315 in other applications such as, but not limited to, cold storage, parking garages, high humidity, or any unconditioned spaces.

Specifications

Finish:	Flat
Color:	Ice Gray, White, Dark Grey & Black
Coverage:	Refer to test report applicable to the jurisdiction of use-Contact IFTI
V.O.C.:	(47 g/l)
Volume Solids:	67%
Drying Time	@ 77°F & 50% RH To touch 1-2 hours to recoat 2 to 4 hours
Type of Cure:	Coalescence
Flash Point:	None
Reducer/Cleaner:	Water
Shelf Life:	1 year (unopened)
Packaging:	5 & 55 gallon containers
Shipping weight:	5 gallon pail - 58 lbs. 55 gallon drum - 640 lbs.
Application:	Brush, roller, conventional and airless spray
Performance:	50+ years HOAC tested
WH Listed:	Spec ID 32890

DC315 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 as Thermal or Ignition barriers in compliance with current Building Codes.

International 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 IAS certified testing facilities. All tests performed comply with the requirements of 2009 IBC Section 803.1.2, and Section 2603.9; 2012 IBC Section 803.1.2 and Section 2603.10

Alternative Ignition Barrier Assemblies DC 315 meets the requirements for ignition barrier per **AC 377, Appendix X.**

National Building Code of Canada Alternative Thermal Barrier Assemblies DC315 prevents flashover for 10 minutes for Combustible Construction or 20 minutes for Non-Combustible construction when tested to the CAN/ULC 9705 Standard **and meets the Intent of NBC Section 3.1.5.12 for the protection of foamed plastics**. Ensure application thickness is applied according to building type.

Testing

USA

- ASTM E84 - Flame Spread 0 Smoke 10
- UL 1715, NFPA 286
- ASTM E2768- 30 minute Ignition Resistant material

Canada

- CAN/ULC S102 FSR 23 SDC 145 - (tested as a system over SPF)
- CAN/ULC S 101
- CAN/ULC 9705 10 and 20 minute assembly testing

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

Application Equipment

DC 315 can be applied by brush, roller or airless sprayer. For maximum yield and coverage spray application is recommended.

Pump:	(Graco) UltraMax 795 or equivalent
PSI:	3000
GPM:	1.1
Tip:	517 - 523 or equivalent.
Filter:	Removal from the machine and gun is required
Hose:	3/8" diameter airless spray line for the first 100' from pump and 1/4" x 3' whip
Pump:	(Graco) TexSpray Mark 5 or equivalent
PSI:	3300
GPM:	1.35
Tip:	517 - 523 or equivalent.
Filter:	Removal from the machine and gun is required
Hose:	3/8" diameter airless spray line for the first 100' from pump and 1/4" x 3' whip
Pump:	(Graco) GMAX 7900 or equivalent
PSI:	3300
GPM:	2.2
Tip:	517 - 529 or equivalent.
Filter:	Removal from the machine and gun is required
Hose:	1/2" diameter airless spray line for the first 100' 300' from pump and 1/4" x 3' whip
Pump:	(Graco) GH 833 or equivalent
PSI:	4000
GPM:	4.0
Tip:	517 - 529 or equivalent.
Filter:	Removal from the machine and gun is required
Hose:	1/2" diameter airless spray line for the first 100'-300' from pump and 1/4" x 3' whip

International Fireproof Technology Inc.

The Ultimate in Firestop Solutions and Fire Protective Coatings

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RDR Technologies, LLC
835 SE 30th, Suite C
Oklahoma City, OK 73129
405-702-0055
rdrtechnologies.com

Application Guide

DC315 is the most tested and approved product for use as an Alternative Thermal Barrier or Ignition Barrier Coating for Spray Polyurethane Foam (SPF). DC315 meets current AC377 and AC456 criteria assuring you the product you are applying is what was tested. DC315 carries multiple Evaluation Reports to ensure compliance with current IBC/IRC, NBCC and many International Codes.

Visit our website at http://www.painttoprotect.com/matrix/ to obtain a current matrix of all the manufacturer's foams that DC315 has been tested and approved over as a Thermal or Ignition barrier.

DC315 tested solutions for Spray Polyurethane Foam

- Code Compliance Evaluated by IAPMO ER-499 Intertek CCRR# 1076 and CCMC#14036-R
- More certified full scale Thermal and Ignition Barrier tests than any other product in the world
- DC315 manufacturing facilities are 3rd. party inspected for Quality Control and Listed under Warnock Hersey Intertek W/N 20947
- Tested useful life, fire resistant property is not compromised after 50 years
- Top coat for color, weather, and moisture protection, tested via NFPA 286 full scale testing
- ANSI 51 testing for incidental food contact
- Passed CAL 1350 - qualifies DC315 as a low-emitting material in the Collaborative for High Performance Schools rating system (CHPS Designed & CHPS Verified)
- Passed strict EPA – VOC and AQMD air emission requirements
- "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

USA Building Code Fire Performance Requirements for SPF:

If a coating does not carry a valid Code Evaluation Report confirming the Coating complies to AC377/AC456 the testing is not valid and cannot be used!

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. DC315 passed certified NFPA 286 testing over a variety of open and closed cell spray applied polyurethane foams that were conducted by IAS certified testing facilities. All testing complies with the requirements of 2009 IBC Section 803.1.2, 2603.9; IRC Section 316.6 2012 IBC Section 803.1.2, 2603.10 IRC Section 316.6 & 2015 IBC Section 803.1.2.1, 803.11, 2603.9 and IRC Section 316.6.

National Building Code of Canada Alternative Thermal Barrier Assemblies (e.g. Exposed SPF or SPF with a Thermal Barrier Protective Covering) DC315 prevents flashover for 10 minutes for Combustible Construction or 20 minutes for equivalency to prescriptive barriers. Tested to the CAN/ULC 9705 Standard. DC315 meets the intent of Section 9.10.17.10 and 3.1.5.12 of the NBCC. Ensure application thickness is applied per building type.

End Use Applications: DC315 is for interior use as a thermal or ignition barrier coating to protect SPF. Contact IFTI for instruction for using DC315 in other applications such as, but not limited to, cold storage, parking garages, high humidity, or any unconditioned spaces.

Testing	
ASTM E 84	Flame Spread 0 Smoke Development 10
CAN/ULC S102 - (tested as a system over SPF)	FSR 23 SDC 145
NFPA 286	15-minute meets IBC Section 2603, 803.1.2 and 803.11. Permitted to be used where Class A finish is required.
CAN/ULC S-101, ASTM E-119	25 minutes
CAN/ULC 9705	20 minutes, Meets NBCC 9.10.17.10 Equivalent to Gypsum Board

Specifications	
Finish	Flat
Color Contact IFTI for Top Coat and Tinting	Ice Grey Standard White and Dark Grey available by special order
VOC	47g/L
Solids by Volume	67%
Specific Gravity	1.30+/-0.05 g/cc
Drying Time	@77°F & 50% R.H. – To touch 1 – 2 hours, to recoat if required 2 to 4 hours
Flashpoint	None
Reducing or Cleaning	Water
Shelf Life	1 year from date of manufacture in unopened containers and stored at 10°C to 27°C (50°F to 80°F). Do not allow to Freeze
Packaging	5 Gal. Pail -Weight 58 lbs. 55 Gal. Drum – Weight 640 lbs.

To confirm the installation complies with IFTI's best practices and is compliant with Code Evaluation reports, installer must have copies of all application documents on site. Installation documents can be downloaded at www.painttoprotect.com or Call IFTI at 949.975.8588 for current copies or with questions.

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 can provide documented proof of the installation, use these forms for all thermal or ignition barrier projects.

Prior to Applying DC315 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. Smooth or 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. We also recommend flash coating around all pipes and air ducts.

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. Failure to do so will seriously compromise the coating's ability to perform. 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 to much water or product will run and drip during application.

DC315 Viscosity: DC315 is a 9,000-10,000-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 to return it to the 9000-10,000 viscosity.

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. IFTI recommends an ideal installation temperature range of 62°F to 90°F. Contact IFTI for applications outside these temperature ranges.

Humidity: Relative humidity plays an equally important role in how well DC315 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 DC315 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 DC315 in high or low humidity 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 industrial dehumidifier is required.

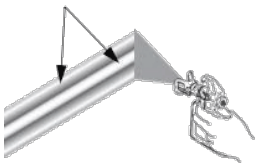
IMPORTANT- when spraying in enclosed or unconditioned spaces, such as attics, it is mandatory to use an "exhaust" blower at one end of the enclosed space and run a hose to the exterior of the building for removing stale air. Use a "supply" blower at the opposite end of the enclosed space and a hose from the exterior to maintain a negative pressure compared to the surrounding area, maintaining at least 0.3 air changes per hour for 48-72 hours following application.

Improper installation practices that do not address temperature, humidity and ventilation will void the warranty. Contact IFTI at 949.975.8588 or email ptp@painttoprotect.com

Application Equipment: DC315 is best applied 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 (See table for a list of recommended sprayers).

Recommended Sprayers	
Pump:	Graco UltraMax795 or equivalent
PSI:	3000
GPM:	1.00
Tip:	517 - 521 or equivalent.
Filter:	Removal of filter from machine and gun (if present) is required
Hose:	3/8" diameter airless spray line for the length of hose from pump and ¼" x 6' whip at gun
Pump:	Graco TexSpray Mark 5 or equivalent
PSI:	3300
GPM:	1.35
Tip:	517 - 523 or equivalent.
Filter:	Removal of filter from machine and gun (if present) is required
Hose:	3/8" diameter air less spray line for the length of hose from pump and ¼"x 6' whip at gun
Pump:	Graco GMAX 7900 or equivalent
PSI: GPM:	3300 2.2
Tip:	517 - 529 or equivalent.
Filter:	Removal of filter from machine and gun (if present) is required
Hose:	1/2" diameter airless spray line for the first 100'-200' from pump. 3/8" for last 50' and ¼" x 6' whip at gun
Pump:	Graco GH 833 or equivalent
PSI:	4000
GPM:	4.0
Tip:	517 - 529 or equivalent.
Filter:	Removal of filter from machine and gun (if present) is required
Hose:	1/2" diameter airless spray line for the first 100'-250' from pump. 3/8" for last 50' and ¼" x 6' whip at gun

Proper equipment and settings are imperative for correct 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. Using the table, 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.

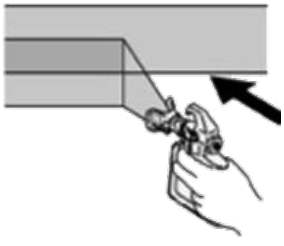
Spraying DC315 for Maximum Yield: If this is the first time using DC315 we suggest testing a pre-measured area to get a feel for spraying and yield. Example, if the job requires 20 wet mils or 80 ft² per gallon, then a 5-gallon pail would cover 400 ft². Measure out one or two 400 ft² sections using pieces of tape, thumbtacks, or canned spray paint. Use just enough to outline the area you intend to apply DC315. 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. DC315 is a single coat application up to 24 mils WFT. If multiple coats are required wait at least 2 hours between coats.

Coverage:
Check appropriate test or Evaluation report for required wet film thickness (WFT) and gallon per square coverage. Theoretical coverage is 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
16 WFT	100 Sq.Ft. Per Gallon	500 Sq.Ft. Per 5 Gallon
18 WFT	89 Sq.Ft. Per Gallon	445 Sq.Ft. Per 5 Gallon
20 WFT	80 Sq.Ft. Per Gallon	400 Sq.Ft. Per 5 Gallon
22 WFT	73 Sq.Ft. Per Gallon	365 Sq.Ft. Per 5 Gallon
24 WFT	67 Sq.Ft. Per Gallon	335 Sq.Ft. Per 5 Gallon

Actual coverage rate will vary based on surface texture, over-spray, and miscellaneous losses. Allow a minimum of 5-10% for over-spray and losses.

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.



Measuring Wet Film Thickness(WFT)

Figure 1

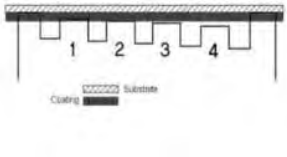


Figure 2

How to Use a Wet Film Thickness Gauge: A WFT gauge is designed to give the spray applicator immediate mil measurement of the film build just been sprayed.

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(Optional): For Wet Film Thickness verification and ease of measuring the applied coating, IFTI suggests placing metal plates (aka Medallions) to the surface of the foam, on average 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 at the end of the job, touch up, and keep them on file or at the job site. They are a great tool to present your code official or Fire Marshal and verify the applied thickness of coating.

Limitations:

DC315 is for interior use. Contact IFTI for detailed application instructions when applying in unconditioned space such as, but not limited to, cold storage, parking garages or high humidity environments such as indoor swimming pools.

Limited Warranty:

To validate warranty, Job Work Records must be filled out for all applications of DC315. Completed Work Records can be submitted to workrecords@painttoprotect.com within 10 Days of Job Completion.

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

General Safety, Toxicity, Health Data

Safety Data Sheets (SDS) are available on this coating material. Any individual who may come in contact with these 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 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 protection is necessary.

International Fireproof Technology, Inc.

17528 Von Karman Ave. Irvine, CA 92614

Safety Data Sheet – DC315

1. Product and Company Identification

Product: Water Based Fireproof Foam Paint
Product Code: DC315

Company: International Fireproof Technology, Inc.
17528 Von Karman Ave. Irvine, CA 92614
Office: 949-975-8588
Emergency Telephone Number: CHEMTREC 1-800-424-9300

2. Hazards Identification

Hazard classification: Acute toxicity (Oral) Cat.4, Skin irritation Cat.3, Eye irritation Cat. 2B, Carcinogenicity Cat.2B

Pictogram :

Signal Words : Warning

Hazard statement : May be harmful if swallowed
Causes mild skin irritation
Cause eye irritation

Precautionary statement :

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear eye or face protection. Do not breathe vapor. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements :

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
FOR INDUSTRIAL USE ONLY.

Hazards not otherwise classified：None known.

3. Composition/Information on Ingredients

Ingredient	CAS No	Percent
Titanium Dioxide	13463-67-7	10 ~ 25 %
Melamine	108-78-1	10 ~ 25 %
Pentaerythritol	115-77-5	10 ~ 20 %

Company: International Fireproof Technology, Inc.
17528 Von Karman Ave. Irvine, CA 92614
Office: 949-975-8588
Emergency Telephone Number: CHEMTREC 1-800-424-9300

4. First Aid Measures

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin Contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Eye Immediately flush eyes with plenty of water, occasionally lifting the

Contact : upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention

Potential acute health effects :

Inhalation : Exposure to decomposition products may cause a health hazard.
Serious effects may be delayed following exposure

Ingestion : May be irritating to mouth, throat and stomach.

Skin contact : No known significant effects or critical hazards.

Eye contact : Causes eye irritation.

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5. Fire Fighting Measures

Suitable extinguishing media :	Use an extinguishing agent suitable for the surrounding fire.
Specific hazards arising from the chemical :	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides metal oxide/oxides
Special protective actions for fire-fighters:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

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6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency Personnel :	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders :	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Environmental precautions:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

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

7. Handling and Storage

Handling:

1. Container must be labeled, close containers when not in use.
2. Ventilate designated places to avoid the release of vapor or mist when using.
3. Suitable fire extinguisher and spill it shall be kept readily available to deal with fire and emergency response to device leakage.

Storage: Comply with the storage and handling of flammable or combustible materials regulations. Store in cool and dry area, away from heat, sparks and freezing temperatures. Use up as soon as possible after opening the lid; Ideal storage temperature is 5 ℃ ~ 35 ℃

8. Exposure Controls/Personal Protection

Ingredient	Regulatory Code	Classification
Titanium Dioxide	ACGIH TLV (United States, 4/2014)	TWA: 10 mg/m³ 8 hours.
	OSHA PEL (United States, 2/2013)	TWA: 15 mg/m³ 8 hours. Form: Total dust
Melamine	AIHA WEEL (United States,10/2011)	TWA: 10 mg/m³ 8 hours. Form: Inhalable
		TWA: 5 mg/m³ 8 hours. Form: Respirable
Pentaerythritol	NIOSH REL (United States, 10/2013)	TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total
	ACGIH TLV (United States, 4/2014)	T TWA: 10 mg/m³ 8 hours.
	OSHA PEL (United States, 2/2013)	TWA: 5 mg/m³ 8 hours. Form: Respirable Fraction TWA: 15 mg/m³ 8 hours. Form: Total dust

Appropriate engineering controls: If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the

following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

9. Physical and Chemical Properties

Appearance :	White liquid
Odor :	Mild emulsion odor
pH :	7.0±1.0
Density (25℃):	1.35±0.1 g/cm^3
Viscosity (at 25℃):	8000 ~ 20000 cps
Volatile :	30 ~ 35□
Solubility :	Water miscible
Partition coefficient: n-octanol / water	N/A
Flash point :	＞100℃

Boiling point/boiling range :	＞100℃
Melting point/range :	N/A
Evaporation rate :	N/A
Vapor pressure :	N/A
Relative vapor density :	N/A
Auto-ignition temperature :	N/A
Flammability (solid, gas) :	N/A
Lower explosion limit :	N/A
Upper explosion limit :	N/A
Self-ignition temperature :	N/A
Decomposition temperature	N/A

10. Stability and Reactivity

Stability:	Stable under ordinary conditions of use and storage.
Special Condition of Hazardous Reaction	N/A
Incompatibilities:	Organic solvent
Materials to Avoid	Strong acid or alkali and oxidant
Hazardous decomposition products	Will emit smoke, CO, CO2 when burned

11.Toxicological Information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Melamine	LD50 Oral	Rat	3161 mg/kg	---
Pentaerythritol	LD50 Oral	Rat	18500 mg/kg	---

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Melamine	Eyes : Mild irritant	Rabbit	---	24 hours 500 milligrams	---
Pentaerythritol	Skin : Mild irritant	Human	---	72 hours 300 Micrograms Intermittent	---

Classification

Product/ingredient name	OSHA	IARC	NTP
Melamine	---	3	---
Pentaerythritol	---	2B	---

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Pentaerythritol	Category 3	Not applicable	Respiratory tract irritation and Narcotic effects

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Pentaerythritol	Category 2	Not determined	Respiratory tract irritation and Narcotic effects

12.Ecological Information

Toxicity

Product/ingredient name	Result	Species	Exposure
Melamine	Acute EC50 33600000	Daphnia –	48 hours

	µg/l Fresh water	Daphnia magna	
Pentaerythritol	Acute LC50 >1000000 µg/l Marine water	Fish – Fundulus heteroclitus	96 hours

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Melamine	---	<3.8	low
Pentaerythritol	---	1.26	low
Titanium Dioxide	---	352	low

13.Disposal Considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transport Information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
UN proper shipping name					
Transport hazard class(es)					
Packing group					
Environmental hazards	No	No	No	No	No
Additional information	Special provisions Not Applicable	Special provisions Not Applicable	Special provisions Not Applicable	Special provisions Not Applicable	Special provisions Not Applicable

Special precautions for user: Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air,

etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

15. Regulatory Information

Ingredient	CAS No	Regulatory Code	Classification
Titanium Dioxide	13463-67-7	CAPROP	CA Prop 65
		IARG2B	IARC - Group 2B - Possibly Carcinogenic to Humans
		WHMHAZ	WHMIS - Canada Hazardous Chemicals
		WMPR	List of WM Priority Chemicals Feb 2014
Melamine	108-78-1	CFPLOW	Flash Points in Flammable/Combustible Range
		WHMHAZ	WHMIS - Canada Hazardous Chemicals
Pentaerythritol	115-77-5	WHMHAZ	WHMIS - Canada Hazardous Chemicals

16. Other Information

This information is based on our present state of knowledge. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application.

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