

TECHNICAL & SAFETY DATA SHEET

Technical Data Sheet		
F-52 D Urethane Concrete Dressing		
POLYMER NATION CHEMICAL COMPANY, LLC		
<p>Product Overview: F-52 D is a revolutionary formulation that allows longer working time with a snap-cure. It combines our urethane resin and Iso with our proprietary blend of portland cement, lime and fillers (PN 1352 D). It has been formulated to work with our TD and SL systems to provide the highest degree of impact and thermal shock resistance of any urethane concrete on the market. It's low odor and easy application make it perfect for industrial and durable decorative applications.</p> <p>Uses: F-52 D is most often used as a topcoat for our TD and SL systems. It can also be used as a coating over vertical concrete and CMU and as a concrete primer for all of our flooring coatings. It's low viscosity and tenacious bond to concrete make it an excellent prime/build coat for many decorative and industrial applications. F-52 D can also be used as a primer when concrete floors exhibit high moisture transmission levels and can be applied to green concrete.</p> <p>Preparation: The preparation method for each project is determined by a full understanding of the substrate to be coated, the chemistry of the coating system being used, the coating system thickness, and numerous other factors. The coating installer should fully read and understand ICRI Guideline NO.03732 and OSHA 29 CFR 1926.1153 before starting preparatory work. The aim, of preparing a substrate for coating applications, is to roughen the surface, remove weak layers, contaminants, dirt, debris and present a solid, clean, dry substrate for the primer. If unsure as to the level of preparation needed contact Polymer Nation at Lab@polymerNation.com.</p> <p>The data below represents the most pertinent information needed by a professional installer to understand and efficiently install this material. The data was gathered at temperatures of 72-75 F and 30-50% RH. A wide array of independent and company test data has been compiled on this product but is too large to place on this Technical Data Sheet. Please direct inquiries for detailed test reports on this product to Lab@polymerNation.com.</p>		
Description	Results	Notes
Number of mixes per kit	1, 50	A 1 mix kit consists of 1 gal A, 1 gal B and 1-16 LB. bag of C. A 50 mix kit consists of 50 gal A, 50 gal B, 50-16 LB. bags C
Number of Components	3	
Mix Ratio Liquids by Volume	1:1 see Mixing & Installation	Accuracy when mixing kits from bulk containers is critical. For mix ratio by weight contact Lab@polymerNation.com.
Ideal Application Temperatures	40F-80F	
Mixed Viscosity in cP@25C/77F	300 A & B	Warmer temperatures will reduce viscosity and lower temperatures will increase viscosity
Gel Time	N/A	Warmer temperatures will decrease gel time and lower temperatures will increase gel time
Dry to Touch	2 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
Through Dry	4 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
Dry to Walk	6 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
Dry to Lightly Use	24 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
Full Cure	7 Days	Warmer temperatures will reduce time and colder temperatures will increase time
Shore Hardness at 24 hours	D70	Warmer temperatures will increase hardness
Shore Hardness at 7 days	D78	Warmer temperatures will shorten time to reach full hardness
Gloss @ 60 Degree Angle	30-40	
VOC's of Mixed Material	<50g/L	EPA Method 24
Color Scale per ASTM D1500	N/A	Milky appearance when mixed before colorants are introduced
Solids by Volume Mixed	>95%	
Storage	60F-90F	Store material between 60-90 degrees F in a protected dry location.
Odor	Subtle	
Coverage Per Mix	Each mix will cover 251 sq. ft. at 20 mils theoretical coverage. A waste factor of 10-15% should be contemplated	
Disposal	Dispose of material, containers, solvents, etc., per Federal, State and local guideline, rules and laws	
Available Colors	This material is available in Natural, Tile Red, Light Gray, Medium Gray, Black	
Mixing & Installation	A mixture consists of 1 gal A, 1 gal B and 16 LB. of C (PN 1352 D). Combine part A and B into a single container, large enough to accept the entire kit (1 mix equals 3.14 gallons when Part C is added). Premix liquids at 350 RPM for 1 minutes using an appropriate mixing blade or mixing machine. Pour material on to floor and spread to desired thickness using squeegee and back roll techniques. If a broadcast has been selected, begin broadcasting evenly across the floor, following the same order in which the coating was installed. Whenever possible, work the shorter distance not the longer as this will help keep a fresh edge and make for easier blending. Recoat within 24 hours. Clean tools with a solvent similar to Xylene or Acetone.	
<p>Polymer Nation believes the information contained herein to be true and accurate. Information contained herein is for evaluation purposes only. Polymer Nation makes no warranty, express or implied based upon this literature and assumes no liability or responsibility for consequential or incidental damages as a result of the use of these products and systems described herein, including any warranty of merchantability or fitness. Last Rev. 4.14.22</p> <p style="text-align: center;">PolymerNation.com</p>		

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1. PRODUCT AND COMPANY IDENTIFICATION

DATE ISSUED:	6/29/2023
MSDS REF. No:	F-52 D/Part A/U2

Product Name: F-52 D Part A
Product Code: U2
Supplier/Manufacturer: POLYMER NATION CHEMICAL
1949 Swanson Court
Gurnee, IL 60031
(847) 774-5038

EMERGENCY PHONE: CHEMTREC, US (800) 424-9300 24-hours
ORIGINAL DATE ISSUED: 12/02/08 **REVISION DATE:** 2/12/2020

Recommended end use: Half of a two-component system designed for application and use as a protective coating.

2. HAZARDS IDENTIFICATION

Acute Oral Toxicity, Category 4
Skin Irritation, Category 2
Respiratory Sensitization, Category 1B
Acute Skin Toxicity, Category 4
Acute Inhalation Toxicity, Category 4



SIGNAL WORD: Warning

Hazard-determining components of labeling: Butyl Benzyl Phthalate

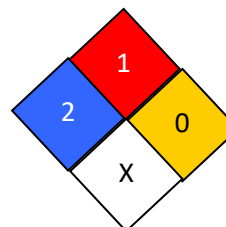
Hazard Statements

H317 May cause an allergic skin reaction
H302 Harmful if swallowed
H312 Harmful in contact with skin
H332 Harmful if inhaled
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

Precautionary Statements

P273 Avoid Release to the Environment
P280 Wear protective gloves/ protective clothing/eye protection/face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue Rinsing.
P310 Immediately Call a POISON CENTER or doctor/physician.

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HMIS RATING	
Health:	2
Flammability:	1
Reactivity:	0
Personal Protection:	X

Potential Health Effects:

SKIN: Repeated skin contact with this product may result in dry, defatted and cracked skin causing increased susceptibility to infection. In addition, irritation that may develop into dermatitis may occur from skin contact. Allergic reactions may occur.

EYES: Liquid aerosols and concentrated vapors of this product may be irritating to the eyes and cause a stinging sensation, tearing, reddening, and possibly swelling of the eyes. If left untreated, corneal injury can occur and injury is slow to heal. Damage is usually reversible.

INHALATION: Vapors and mists of this product can be irritating to the mucous membranes and respiratory tract. Symptoms may include sore throat, coughing, shortness of breath, headache, and dizziness. The vegetable oil component of this product may cause allergic asthmatic reaction in persons previously exposed. At elevated temperatures, the generated vapor or mist of this product may cause irritation and dehydration of the mucous membranes of the respiratory tract. The butyl benzyl phthalate component may cause irritation and central nervous system depression if sufficient quantities are absorbed.

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INGESTION: The product can cause gastrointestinal distress and can result in irritation in digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea. May also cause central nervous system depression with headache, dizziness, and drowsiness. Aspiration of the vegetable oil may result in pneumonia.

CHRONIC HAZARDS: With repeated or prolonged contact, this product may aggravate an existing dermatitis or other allergic reactions, as well as existing respiratory conditions. Not classified as a carcinogenic substance as defined by IARC, NTP and/or OSHA.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This document is a pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). Where a proprietary ingredient is shown, the identity may be made available as provided in this standard. All components of this product are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	OSHA Exposure Limits (TWA Respirable Fract)	Weight %	CAS Number
Vegetable Oil	5.00mg/m ³	<50%	Trade Secret
Butyl Benzyl Phthalate	Not Established	<20%	85-68-7
Glycerin	5.00 mg/m ³	<5%	56-81-5

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to physician in attendance.

EYES: In case of contact, flush eyes with plenty of clean, lukewarm water. Use fingers to hold eyelids open. Get medical attention if irritation develops or persists.

SKIN: In case of skin contact, wash affected areas with soap and lukewarm water. Immediately remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. Wash clothing and shoes before reuse.

INGESTION: If swallowed, DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Drink one to two cups of water or milk to drink. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention immediately. Should vomiting occur, keep head lower than hip level to prevent aspiration of fluid into the lungs.

INHALATION: Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Get medical attention.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Carbon dioxide (CO₂), dry chemical, foam, water spray for large fires.

For safety reasons, unsuitable extinguishing agents: None known.

SPECIAL FIRE & UNUSUAL HAZARD: May generate toxic or irritating combustion products. Organic solvent vapors (PMA) / air mixtures are explosive above flash point.

SPECIAL FIREFIGHTING INSTRUCTIONS: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, irritating and toxic gases and smoke are present from decomposition and combustion. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Solid residue will support combustion after the water has evaporated.

ADDITIONAL INFORMATION: Remove all ignition sources. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

HAZARDOUS COMBUSTION PRODUCTS formed under fire conditions: Irritating and toxic gasses.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate all non-essential personnel. Ventilate the area. Equip cleanup crew with appropriate protective equipment. Use personal protective equipment. Avoid breathing vapors, mist, or gas. Evacuate personnel to safe area. Ensure adequate ventilation. Wear a self-contained breathing apparatus and appropriate personal protective equipment.

Environmental precautions: Approach suspected leak areas with caution. Prevent further leaking if safe to do so. Construct a dike to prevent spreading. Flush area with water spray. Cover spill with sawdust, vermiculite, Fuller's earth, or other absorbent material. Collect material in open containers. Remove containers to a safe place and cover. Flush spill area with water. Avoid runoff into storm sewers and ditches which lead into waterways. Discharge into the environment must be avoided. If seepage into the environment has occurred, notify respective authorities. Open enclosed spaces to outside atmosphere if possible and stop flow of product. Notify appropriate authorities if necessary.

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for disposal information.

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7. HANDLING AND STORAGE

HANDLING: Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Keep container closed when not in use. Avoid breathing dust, vapor, or mist. Avoid contact with eyes. Avoid contact with skin or clothing. PMA may form peroxides during prolonged storage. Avoid contact with light and check peroxide content before use. Educate and train employees in the safe handling of this product.

STORAGE: Store between 32°F and 120°F. Keep from freezing. Keep container closed when not in use. Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatibilities. Store in original or similar containers. Store separate from food products.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Thermal processing operations should be ventilated to control gases and fumes given off during processing. Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls such as ventilation. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent the buildup of explosive atmospheres and to prevent off gases from entering the workplace.

Personal Protection Equipment:

Respiratory Protection: A respirator that is recommended or approved for use in organic vapor containing environments may be necessary. In spray applications, an organic vapor/particulate respirator or air supplied unit is necessary. Consider type of application and environmental concentrations. Take into account other materials being used concurrently. Observe OSHA regulations for respirator use (29 CFR 1910.134).



Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron, or coveralls, as appropriate, to prevent skin contact. If skin creams are used, keep the area protected only by the cream to a minimum.



Eye Protection: Use chemical safety goggles when working with this material and/or a full-face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area. DO NOT WEAR CONTACT LENSES when working with this material!!!

Other Protection: Safety showers and eyewash stations should be easily accessible to the work area. Educate and train employees in the safe use and handling of this product.

Hygienic Practices: Wash hands before eating. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because they may retain product residues. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin, and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Volatile Organic Content: N/D	Solubility in Water: Miscible
Color: Milky White	Specific Gravity @ 20°C: Ca. 1.00
Odor: Weak	pH @ 100%: Ca. 7.2
Physical Appearance: Cloudy Thixotropic Liquid	Melting/Freezing point: N/A
Boiling Point: N/A	Flashpoint: >212°F
Ignition Temperature: N/A	Auto-ignition temperature: Approximately 707°F (similar
Explosion Limits:	Water solubility: Miscible
Lower: 1.5% @ 200 C PMA	Partition coefficient (n-octanol/water): N/A
Upper: 7.0% @ 200 C PMA	Relative vapor density: N/A
Odor Threshold: N/A	Evaporation rate: N/A
N/A = Not Available N/D = Not Determined Ca. = Approximate	

10. STABILITY AND REACTIVITY

STABILITY: This product is stable under recommended and normal conditions of storage and use.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

INCOMPATIBILITY: Strong oxidizing agents, reducing agents, acids, alkalis.

HAZARDOUS DECOMPOSITION PRODUCTS: By Fire and Thermal Decomposition: Carbon Dioxide; Carbon Monoxide; oxides of nitrogen (NO_x), and other unknown aliphatic fragments.

CONDITIONS TO AVOID: Open Flame / Sparks / Sources of ignition. Heat. Freezing.

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11. TOXICOLOGICAL INFORMATION

Component Toxicological Information:

PRIMARY ROUTE OF ENTRY: Skin Contact. Skin Absorption. Inhalation. Ingestion. Eye Contact.

Toxicity Data for Vegetable Oil: Eye Irritation: 500mg – Rabbit – Mild. Skin Effects: 100 mg/24 hours - Rabbit – Severe.

Toxicity Data for Butyl Benzyl Phthalate: Acute Oral Toxicity: LD50: 2330 mg/kg (Rat). Skin Irritation: LD50: 6700 mg/kg (Rat).

Other acute effects: Animal studies report that central and peripheral neuropathies may occur. Mammals exposed to 13100 mg/m³ suffered some somnolence, withdrawal, weight loss and death of 50% of the animals tested.

Chronic toxicity: Chronically fed rats exhibited leukemia and lymphomas, including Hodgkin's' disease. Male rats chronically fed exhibited effects on reproductive organs.

12. ECOLOGICAL INFORMATION

Marine Pollutant/Ecotoxicity: LC50: 510 µg/L for 96hours (Mortality), Shiner perch (Cymatogaster aggregate). Invertebrate toxicity: EC50: 6900 µg/L for 48 hours (Shell Deposition), American or Virginia oyster (Crassostrea virginica). Plant toxicity: EC50: 170µg/L for 96 hours (Photosynthesis), Diatom (Skeletonema costatum).

Environmental Fate: Bioconcentration of vegetable oil 480µg/L 14 days BCF (residue) common, mirror, colored, carp (Cyprinus Carpio) 0.86µg/L.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Comply with all Federal, State and Local regulations. Incineration is the preferred method. All containers should be disposed of in accordance with governmental regulations in an environmentally safe manner. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

14. TRANSPORT INFORMATION

DOT SHIPPING INFORMATION

DOT Proper Shipping Name: Polyalcohol Emulsion containing butyl benzyl phthalate

DOT Technical Name: Environmentally Hazardous Substance, Liquid, N.O.S. (contains butyl benzyl phthalate)

DOT Hazard Class: 9

Hazard Subclass: N.A.

DOT I.D. Number: UN3082

Packing Group: III

***When in individual containers of less than the Product RQ, this material ships as non-regulated. (RQ: 500lbs)**

IMDG

Technical Name: Environmentally Hazardous Substance, Liquid, N.O.S. (contains butyl benzyl phthalate)

Hazard Class: 9

Hazard Subclass: N.A.

I.D. Number: UN3082

Packing Group: III

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with the hazard criteria of the Controlled Product Regulations and the MSDS contains the information required by those regulations.



CANADIAN WHMIS CLASS: D2B

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS AS FOLLOWS-

OSHA Hazard Communication Standard (29 CFR 1910.1200): Hazardous by definition of Hazard Communication Standard.

CERCLA/ Super Fund (40 CFR 117, 302): Butyl Benzyl Phthalate (100lbs)

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Immediate Health Hazard (Acute)

SARA Toxic Chemicals (40 CFR 372):

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: **None.**

TOXIC SUBSTANCES CONTROL ACT: Listed on the TSCA inventory.

NEW JERSEY RIGHT-TO-KNOW/ PENNSYLVANIA RIGHT-TO-KNOW:

Component Name	CAS Number	Weight Percentage
Vegetable Oil	NJTSRN (31765300002)-12213	<50%
Water	7732-18-5	<35%
Butyl Benzyl Phthalate	85-68-7	<25%

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16. OTHER INFORMATION

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, POLYMER NATION CHEMICAL CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.

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1. PRODUCT AND COMPANY IDENTIFICATION

DATE PRINTED:	6/29/2023
MSDS REF. No:	F-52 D/Part B/ISO3

Product Name: F-52 D Part B
Product Code: ISO3
Supplier/Manufacturer: POLYMER NATION CHEMICAL
1949 Swanson Court
Gurnee, IL 60031
(847) 774-5038

EMERGENCY PHONE: CHEMTREC, US (800) 424-9300 24-hours
ORIGINAL DATE ISSUED: 12/02/08 **REVISION DATE:** 10/14/13

Recommended end use: Half of a two-component system designed for application and use as a protective coating.

2. HAZARDS IDENTIFICATION

Acute Oral Toxicity, Category 2

Skin Corrosion, Category 1C

Serious Eye Damage, Category 2A

Aspiration Hazard, Category 1



SIGNAL WORD: Danger

Hazard-determining components of labeling: 4,4'-Diphenylmethane Diisocyanate

Hazard Statements

H317 May cause an allergic skin reaction
H304 May be fatal if swallowed and enters airways
H412 Harmful to aquatic life with long lasting effects
H335 May cause respiratory irritation
H314 Causes severe skin burns and eye damage

Precautionary Statements

P273 Avoid Release to the Environment
P280 Wear protective gloves/ protective clothing/eye protection/face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue Rinsing.
P310 Immediately Call a POISON CENTER or doctor/physician.

HMIS RATING	
Health:	2*
Flammability:	1
Reactivity:	1
Personal Protection:	X

* Chronic Health Hazard

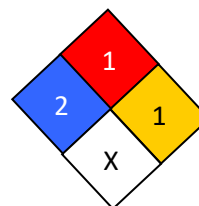
Potential Health Effects:

SKIN: Acute: Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, itching, rash, scaling, blistering, and swelling. Cured material is difficult to remove. Contact with MDI can cause discoloration. **Chronic:** Prolonged contact can cause reddening, swelling, rash, and in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction.

EYES: Causes irritation with symptoms of reddening, tearing, stinging, and swelling. If left untreated, corneal damage can occur and injury is slow to heal. Damage is usually reversible. See first aid for treatment.

INHALATION: Acute: MDI vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV of PEL may lead to bronchitis, bronchial spasm, and pulmonary edema (fluid in lungs). These

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effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.

Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the TLV or PEL. These symptoms, which include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many nonspecific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

INGESTION: May cause irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

CHRONIC HAZARDS: No Carcinogenic substances as defined by IARC, NTP and/or OSHA. Medical conditions aggravated by exposure include skin allergies, eczema, asthma, and respiratory disorders (bronchitis, emphysema, bronchial hyper reactivity).

3. COMPOSITION/INFORMATION ON INGREDIENTS

This document is a pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). Where a proprietary ingredient is shown, the identity may be made available as provided in this standard. All components of this product are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	OSHA Exposure Limits	Weight %	CAS Number
4,4'-Diphenylmethane Diisocyanate (MDI)	0.02ppm Ceiling 0.20mg/m ³ Ceiling	<35%	101-68-8
Higher Oligomers of MDI	Not Established	<50%	9016-87-9
Diphenylmethane Diisocyanate (MDI)	Not Established	<35%	26447-40-5

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to physician in attendance.

EYES: In case of contact, flush eyes with plenty of lukewarm water for at least 15 minutes. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Get medical attention.

SKIN: In case of skin contact, wash affected areas with soap and lukewarm water. Immediately remove contaminated clothing and shoes. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

INHALATION: If inhaled, remove to fresh air, free from further exposure. Get medical attention if irritation develops. Administer oxygen or artificial respiration as needed. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult a physician should this occur. Extreme asthmatic reactions can be life threatening.

INGESTION: If swallowed, DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention immediately.

NOTE TO PHYSICIANS

EYES: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

SKIN: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. If burned, treat as a thermal burn.

INGESTION: Treat symptomatically. MDI has very low oral toxicity. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.

INHALATION: This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any isocyanate.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, Carbon dioxide (CO₂), Foam, water spray for large fires.

For safety reasons, unsuitable extinguishing agents: N/A.

SPECIAL FIRE & UNUSUAL HAZARD: Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous.

SPECIAL FIREFIGHTING INSTRUCTIONS: Firefighters should wear NFPA compliant structural firefighting protective equipment including self-contained breathing apparatus and DFPA compliant helmet, hood, boots, and gloves. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. At temperatures greater than 400°F, polymeric MDI can polymerize and decompose which can cause pressure build up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

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ADDITIONAL INFORMATION: None available

HAZARDOUS COMBUSTION PRODUCTS formed under fire conditions: Carbon oxides, explosive rupture.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Evacuate non-emergency personnel. Isolate the area and prevent access. Remove ignition sources. Notify management. Put on protective equipment. Control source of the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. Call ChemTel at 800-255-3924 for assistance and advice.

Environmental Precautions: Major Spill or Leak (Standing liquid): If temporary control of isocyanate vapor is required, a blanket of protein foam may be placed over the spill. Large quantities may be pumped into a closed, but not sealed, container for disposal. Minor Spill: Absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%) or water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO₂ escape. Clean-up: Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

Prime Coat requires CHEMTREC be notified immediately when this product is released unintentionally from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having the knowledge of the release.

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Do not breathe vapors, mists, or dusts. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from chronic inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe the smoke and gases created by overheating or burning this material. Exposure to vapors of heated MDI can be dangerous. Employee education and training in the safe use and handling of this compound are required under the OSHA Hazard Communication Standard.

STORAGE: Storage temperatures have not been established for this product. Similar product should be stored between 64°F and 86°F. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatibilities. Do not store near food stuffs. Storage period is approximately 6 months at 77°F after receipt of material by customer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Local exhaust should be used to maintain levels below the TLV whenever MDI is heated, sprayed, or aerosolized. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation.

4, 4'-Diphenylmethane Diisocyanate

U.S. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 0.005 ppm

U.S. OSHA Table Z-1 Limits for Air Contaminants

Ceiling Limit Value: 0.02 ppm, 0.2 mg/m³

Personal Protection Equipment:



Respiratory Protection: Airborne MDI concentrations greater than the TLV or PEL can occur in inadequately ventilated environments when MDI is sprayed, aerosolized, or heated. In such cases, respiratory protection must be worn. The type of respiratory protection elected must comply with the requirements set forth in OSHA's 29 CFR 1910.134. The type of respiratory protection available includes an atmosphere-supplying respirator such as a self-contained breathing apparatus or a supplied air respirator in the positive pressure or continuous flow mode. See Standard for more information.



Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron, or coveralls, as appropriate, to prevent skin contact. Gloves should be tested for chemical resistance before reliable use. (Penetration times,

TECHNICAL & SAFETY DATA SHEET

rates of diffusion and rate of degradation). Wear long sleeves and pants, exposing as little skin as possible. If skin creams are used, keep the area covered by the cream to a minimum.



Eye Protection: Use chemical safety goggles and/or a full-face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area. DO NOT WEAR CONTACT LENSES when working with this material!!!

MEDICAL SURVEILLANCE: All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted. Refer to the Bayer pamphlet (Medical Surveillance Program for Isocyanate Workers) for additional guidance.

ADDITIONAL PROTECTIVE MEASURES: Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

Hygienic Practices: Wash hands before eating. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because they may retain product residues. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin, and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Volatile Organic Content: Negligible	Solubility in Water: Insoluble, reacts slowly with water to liberate CO ₂
Color: Dark brown to black	Specific Gravity @ 20°C: 1.24
Odor: Musty	pH @ 100%: N.A.
Physical Appearance: Brownish Liquid.	Melting/Freezing point: N/A
Boiling Point: Ca. 285°C (545°F) @ 1,013hPa (DIN53171)	Flashpoint: N/A
Ignition Temperature: N/A	Auto-ignition temperature: N/A
Explosion Limits:	Water solubility: Insoluble, reacts slowly with water to liberate CO ₂
Lower: N/A	Partition coefficient (n-octanol/water): N/A
Upper: N/A	Relative vapor density: N/A
Odor Threshold: N/A	Evaporation rate: N/A
N/A = Not Available N/D = Not Determined Ca. = Approximate	

10. STABILITY AND REACTIVITY

STABILITY: Stable under recommended and normal conditions of use and storage.

HAZARDOUS POLYMERIZATION: May occur with contact to moisture and other materials which react with isocyanates, or temperatures above 400°F.

INCOMPATIBILITY: Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum.

HAZARDOUS DECOMPOSITION PRODUCTS: By Fire and Thermal Decomposition: Carbon dioxide (CO₂), Carbon Monoxide (CO), oxides of nitrogen (NO_x), Hydrogen Cyanide, MDI vapors or aerosols.

CONDITIONS TO AVOID: See Incompatibilities. Fire. Heat. Flame. Freezing.

11. TOXICOLOGICAL INFORMATION

Component Toxicological Information:

PRIMARY ROUTE OF ENTRY: Skin Contact, Inhalation, Eye Contact.

Toxicity Data for Diphenylmethane Diisocyanate

Route		Species
Oral	LD50> 10000mg/kg	Rat
Dermal	LD50>6200 mg/kg	Rabbit
Inhalation	Monomeric: LC50: 172-187mg/m ³ Polymeric LC50: LC50: 370-490mg/m ³	Rat

Eye Effects: Slight to moderate irritation-Rabbit

Skin effects: Slight to moderate irritation-Rabbit

Sensitization: MDI has been shown to produce dermal sensitization in laboratory animals. Evidence of respiratory sensitization has also been observed in guinea pigs. In addition, there is some evidence suggestive of cross-sensitization between different types of diisocyanates.

TECHNICAL & SAFETY DATA SHEET

Chronic Toxicity: In a combined chronic inhalation toxicity/oncogenicity study, rats were exposed to an aerosol of polymeric MDI for 6 hours per day, 5 days per week for one or two years. The exposure concentrations were 0, 0.2, 1.0, and 6.0 mg/m³. Microscopic examination of tissues revealed the effects of irritation to the nasal cavity and lungs in animals exposed to 1.0 and 6.0 mg/m³. The NOEL was 0.2 mg/m³.

Carcinogenicity: In the study described above, the occurrence of pulmonary adenomas and a single pulmonary adenocarcinoma was considered to be related to MDI. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m³.

Mutagenicity: Positive (Salmonella microsome test with metabolic activation; cell transformation assay) as well as negative (mouse lymphoma specific locus mutation test with or without metabolic activation) results have been observed "in vitro"/ The use of certain solvents which rapidly hydrolyze MDI is suspected of producing mutagenicity in some of these studies. MDI was negative in an "in vivo" (mouse micronucleus) assay.

Developmental Toxicity: Rats were exposed to polymeric MDI at air concentrations of 0,1,4, and 12 mg/m³ during days 6-15 of gestation. Maternal toxicity (including mortality) was observed at the highest concentration of 12 mg/m³ accompanied by embryo and fetal toxicity. However, no teratogenic effects were observed even at this lethal concentration.

12. ECOLOGICAL INFORMATION

Ecological Data for Diphenylmethane Diisocyanate (Monomeric and Polymeric)

Environmental Toxicity: LC50-24hour (static): greater than 500mg/liter for Daphnia magna, Limnea Stagnalis, and Zebra Fish (Brachydanio rerio) for both polymeric and monomeric MDI.

Fish Toxicity: LC50: greater than 1000 mg/l; for Brachydanio rerio; duration of test 96hr.

Inhibition Bacteria: EC50 is greater than 100 mg/l; tested on activated sludge microorganism. Duration test: 3 hours.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Comply with all Federal, State and Local environment control laws. Incineration is the preferred method. If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

14. TRANSPORT INFORMATION

DOT SHIPPING INFORMATION

DOT Proper Shipping Name: Other regulated substances, liquid, N.O.S. (contains 4, 4'-Diphenylmethane Diisocyanate (MDI))

DOT Technical Name: N.A.

DOT Hazard Class: 9

Hazard Subclass: N.A.

DOT I.D. Number: UN3082

Packing Group: III

Additional Transportation Information: When in individual containers of less than the Product RQ, this material ships as non-regulated. RQ: 15625lb

IMDG

Technical Name: Other regulated substances, liquid, N.O.S. (contains 4, 4'-Diphenylmethane Diisocyanate (MDI))

Hazard Class: 9

Hazard Subclass: N.A.

I.D. Number: UN3082

Packing Group: III

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with the hazard criteria of the Controlled Product Regulations and the MSDS contains the information required by those regulations.



CANADIAN WHMIS CLASS: E

D2A

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS AS FOLLOWS-

OSHA Hazard Communication Standard (29 CFR 1910.1200): Hazardous by definition of Hazard Communication Standard.

Sensitizer. Corrosive.

CERCLA/ Super Fund (40 CFR 117, 302):

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Immediate Health Hazard (Acute) Delayed Health Hazard (Chronic)

SARA Toxic Chemicals (40 CFR 372):

TECHNICAL & SAFETY DATA SHEET

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical Name	CAS Number
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8
Polymeric Diphenylmethane Diisocyanate (pMDI)	9016-87-9

TOXIC SUBSTANCES CONTROL ACT: All chemicals in this compound are listed on the TSCA

NEW JERSEY RIGHT-TO-KNOW / PENNSYLVANIA RIGHT-TO-KNOW:

Chemical Name	CAS Number	Weight Percent
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8	0.1-0.3%
Polymeric Diphenylmethane Diisocyanate (pMDI)	9016-87-9	≤0.3%

California Proposition 65: To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, POLYMER NATION CHEMICAL CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.

TECHNICAL & SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

DATE PRINTED:	6/29/2023
MSDS REF. No:	F-52 D Part C/1352D

Product Name: F-52 D Part C
Product Code: 1352D
Supplier/Manufacturer: POLYMER NATION CHEMICAL
1949 Swanson Court
Gurnee, IL 60031
(847) 774-5038

EMERGENCY PHONE: CHEMTREC, US (800) 424-9300 24-hours
ORIGINAL DATE ISSUED: 12/02/08 **REVISION DATE:** 9/12/13

Recommended end use: Additional component for epoxy system to create nonskid texture.

2. HAZARDS IDENTIFICATION

Specific Target Organ Toxicity (Single Exposure), Category 3
Specific Target Organ Toxicity (Repeated Exposure), Category 1
Carcinogenicity, Category 1A



SIGNAL WORD: Danger

Hazard-determining components of labeling: Crystalline Silica

Hazard Statements

H335 May cause respiratory irritation

H350 May cause cancer (inhalation)

H372 Causes Damage to organs (lungs/respiratory system) through prolonged or repeated exposure (inhalation)

Precautionary Statements

P280 Wear protective gloves/ protective clothing/eye protection/face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue Rinsing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P201 Obtain special instructions before use

P271 Use only outdoors or in a well-ventilated area

P260 Do not breathe dust

HMIS RATING	
Health:	2*
Flammability:	0
Reactivity:	0
Personal Protection:	E

Potential Health Effects:

SKIN: May cause irritation.

EYES: May cause irritation. May cause abrasion of the cornea.

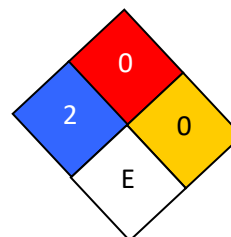
INHALATION: Silicosis, Scleroderma, Cancer of the Lungs, Tuberculosis and Nephrotoxicity are all possible side effects.

Immediate symptoms may include coughing, sneezing, burning sensation of the throat with constriction of the larynx and accompanied with breathing difficulties.

INGESTION: Not expected to be a relevant route of entry. Abdominal Pain.

CHRONIC HAZARDS: Respiratory difficulties. May cause cancer.

NFPA CODES



3. COMPOSITION/INFORMATION ON INGREDIENTS

This document is a pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). Where a proprietary ingredient is shown, the identity may be made available as provided in this standard. All components of this product are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	Weight %	CAS Number
Crystalline Silica (quartz)	60-100%	14808-60-7

TECHNICAL & SAFETY DATA SHEET

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to physician in attendance.

EYES: Hold eyelids open and flush with plenty of water for at least 20 minutes. Get medical attention if irritation develops or persists.

SKIN: Rinse with plenty of water. Gently wash with soap and water. Obtain medical attention if irritation persists.

INGESTION: DO NOT INDUCE vomiting, seek medical attention immediately.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Crystalline Silica (quartz) is not flammable, combustible, or explosive. Use extinguishing agent suitable for surrounding fire.

For safety reasons, unsuitable extinguishing agents: None known.

SPECIAL FIRE & UNUSUAL HAZARD: None known.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Not applicable, wear normal firefighting precautionary materials.

ADDITIONAL INFORMATION: None.

HAZARDOUS COMBUSTION PRODUCTS formed under fire conditions:

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid breathing dust. Evacuate personnel to safe area. Ensure adequate ventilation.

Environmental precautions: Avoid dust generation. Recover by vacuuming, shoveling, or sweeping. Vacuum must be fitted with HEPA filter to prevent release of particles into the air during clean-up.

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Handle in a well-ventilated workspace. Avoid breathing vapors, dust, or mist. Avoid contact with eyes. Avoid contact with skin or clothing. Avoid creating dust. Keep respirators clean.

STORAGE: Keep away from food, drink, and animal feed stuffs. Keep away from incompatibilities. Store in original container or a container very similar to that of the original. Keep away from children. Keep container closed when not in use. Keep container in a cool, well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Good general ventilation should be sufficient to control airborne levels. Local exhaust ventilation may be necessary to control any air contaminants.

Control Parameters:

Quartz (14808-60-7)

USA ACGIH	ACGIH TWA (mg/m ³)	0.025 mg/m ³
USA IDLH	US IDLH (mg/m ³)	50 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.05 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³) (Mineral Dust)	(30)/(%SiO ₂ + 2) mg/m ³ – total dust (10)/(% SiO ₂ + 2) mg/m ³ – respirable fraction

Personal Protection Equipment:



Respiratory Protection: In poorly ventilated areas, wear respiratory protection. In cases of high dust production, wear self-contained breathing apparatus.



Skin Protection: Where contact is likely, wear chemical resistant gloves, rubber boots, and chemical safety goggles. Gloves should be tested for chemical resistance before reliable use. (penetration times, rates of diffusion and rate of degradation). Wear long sleeves and pants, exposing as little skin as possible. Dust proof clothing is also recommended.

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Eye Protection: Wear chemical safety glasses with side shields or goggles. In the event of an emergency, use eye goggles with a full-face shield. DO NOT WEAR CONTACT LENSES when working with this material!!

Hygienic Practices: Wash hands before eating. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin, and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Volatile Organic Content: 0.00 g/L	Solubility in Water: Insoluble
Color: Natural Color	Specific Gravity @ 20°C: 2.6338
Odor: None.	pH @ 100%: N.A.
Physical Appearance: Granular Solid	Melting/Freezing point: 1710°C (3110°F)
Boiling Point: 2230°C (4046°F)	Flashpoint: 95°C
Ignition Temperature: N/A	Auto-ignition temperature: N/A
Explosion Limits: Lower: N/A Upper: N/A	Water solubility: Insoluble
	Partition coefficient (n-octanol/water): N/A
	Relative vapor density: N/A
Odor Threshold: N/A	Evaporation rate: N/A
N/A = Not Available N/D = Not Determined Ca. = Approximate	

10. STABILITY AND REACTIVITY

STABILITY: This product is stable under recommended and normal storage conditions.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

INCOMPATIBILITY: Powerful oxidizing agents- Fluorine, chlorine trifluoride, and oxygen difluoride may cause fires.

HAZARDOUS DECOMPOSITION PRODUCTS: Will dissolve in hydrofluoric acid and produce silicon tetrafluoride, a corrosive gas.

CONDITIONS TO AVOID: See incompatibilities.

11. TOXICOLOGICAL INFORMATION

Component Toxicological Information: (Acute)

Likely routes of entry: Inhalation

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: May cause cancer (inhalation).

Quartz (14808-60-7)	
IARC group	Group 1
National Toxicity Program (NTP) Status	Known Human Carcinogen

Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	: Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation).

Silica Sand, All Grades (14808-60-7)	
Additional information	Repeated or prolonged exposure to respirable crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.

Aspiration hazard	: Not classified
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Inhalation of respirable silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of silica dust may have the following serious chronic health effects:

TECHNICAL & SAFETY DATA SHEET

Silicosis: The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute. Chronic or Ordinary Silicosis (often referred to as Simple Silicosis) is the most common form of silicosis and can occur after many years of exposure to relatively low concentrations of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter characterize simple silicosis, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough, and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier, and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, and weight loss. Acute silicosis can be fatal.

Cancer: The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans (Group 1)*. The National Toxicology Program (NTP), in its Ninth Annual Report on Carcinogens, classified "silica, crystalline (respirable)" as a known human carcinogen. Crystalline silica (quartz) is not regulated as a human carcinogen by the Occupational Safety and Health Administration (OSHA) as a carcinogen. However, there are limits being set by OSHA at this time.

Autoimmune Diseases: There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis.

Kidney Disease: There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease.

Skin Contact: No adverse effects expected.

Eye Contact: Contact may cause mechanical irritation and possible injury.

Ingestion: No adverse effects expected for normal, incidental ingestion.

There may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz). See "Inhalation" subsection above for symptoms of silicosis. The absence of symptoms is not necessarily indicative of safe conditions.

Acute Toxicity Value: Silica – LD50 oral rat 22,500 mg/kg

12. ECOLOGICAL INFORMATION

Marine Pollutant/Ecotoxicity:

Toxicity to fish:

Silica

LC50 carp >10,000 mg/L/72 hr.

Environmental Fate: Not readily biodegradable. Not expected to bioaccumulate.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: The generation of waste should be avoided or minimized wherever possible. Do not dispose of with household waste. Do not dispose of in landfill. Do not allow contact with sewers or waterways. Comply with all Federal, State and Local regulations. Incinerate in admixture with fuel equipped with a scrubber to remove nitrogen oxides and carbon monoxide. Disposal of in permitted waste management facility if incineration or landfill is not practicable.

14. TRANSPORT INFORMATION

DOT SHIPPING INFORMATION

DOT Proper Shipping Name: Dry Stone-Not Regulated

DOT Technical Name: N/A

DOT Hazard Class: N/A

DOT I.D. Number: N/A

IMDG

Technical Name: N/A

Hazard Subclass: N/A

Packing Group: N/A

TECHNICAL & SAFETY DATA SHEET

Hazard Class: N/A

Hazard Subclass: N/A

I.D. Number: N/A

Packing Group: N/A

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with the hazard criteria of the Controlled Product Regulations and the MSDS contains the information required by those regulations.



CANADIAN WHMIS CLASS: D2A

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS AS FOLLOWS-

OSHA Hazard Communication Standard (29 CFR 1910.1200): Hazardous by definition of Hazard Communication Standard Carcinogen. Toxic and hazardous substance.

CERCLA/ Super Fund (40 CFR 117, 302):

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Delayed Health Hazard (Chronic)

SARA Toxic Chemicals (40 CFR 372):

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: **None.**

TOXIC SUBSTANCES CONTROL ACT: All chemicals in this compound are listed on the TSCA.

NEW JERSEY RIGHT-TO-KNOW / PENNSYLVANIA RIGHT-TO-KNOW: Crystalline Silica 14808-60-7

California Proposition 65: Crystalline Silica 14808-60-7

16. OTHER INFORMATION

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, POLYMER NATION CHEMICAL CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.