

# SAFETY DATA SHEET

PCF 229-N-2, A-Side  
Nov 29, 2022

## SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

**Product ID:** 10-10676  
**Product Name:** PCF 229-N-2, A-Side  
**Revision Date:** Nov 29, 2022 **Date Printed:** Nov 29, 2022  
**Version:** 1.0 **Supersedes Date:** N.A.  
**Manufacturer's Name:** Polycoat Products  
**Address:** 14722 Spring Ave, Santa Fe Springs, CA, US, 90670-5108  
**Emergency Phone:** Chemtrec:800-424-9300 (account: CCN1217) OR International:703-527-3887 (account:CCN1217)  
**Information Phone Number:** (562) 802-8834  
**Fax:** (562) 921-7363  
**Product/Recommended Uses:** For Further Information, Refer to the Product Technical Data Sheet.

## SECTION 2) HAZARDS IDENTIFICATION

### Classification:

Specific Target Organ Toxicity -Single Exposure (Respiratory Tract Irritation) - Category 3  
Specific Target Organ Toxicity - Repeated Exposure - Category 2  
Skin Irritation - Category 2  
Eye Irritation - Category 2A  
Respiratory Sensitizer (Solid/Liquid) - Category 1  
Skin Sensitizer - Category 1  
Carcinogenicity - Category 2

### Pictograms:



### Signal Word:

Danger

### Hazardous Statements - Health:

H351 - Suspected of causing cancer.  
H319 - Causes serious eye irritation  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H373 - May cause damage to organs through prolonged or repeated exposure.  
H335 - May cause respiratory irritation

### Precautionary Statements - General:

P101 - If medical advice is needed, have product container or label at hand.  
P102 - Keep out of reach of children.  
P103 - Read label before use.

**Precautionary Statements - Prevention:**

- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P264 - Wash thoroughly after handling.
- P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
- P284 - [In case of inadequate ventilation] wear respiratory protection.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
- P271 - Use only outdoors or in a well-ventilated area.
- P233 - Keep container tightly closed.

**Precautionary Statements - Response:**

- P308 + P313 - IF exposed or concerned: Get medical advice/attention.
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 - If eye irritation persists: Get medical advice/attention.
- P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
- P302 + P352 - IF ON SKIN: Wash with plenty of water.
- P321 - Specific treatment (see section 4 on this SDS).
- P332 + P313 - If skin irritation occurs: Get medical advice/attention.
- P362 + P364 - Take off contaminated clothing. And wash it before reuse.
- P333 + P313 - If skin irritation or a rash occurs: Get medical advice/attention.
- P314 - Get Medical advice/attention if you feel unwell.
- P312 - Call a POISON CENTER/doctor if you feel unwell.

**Precautionary Statements - Storage:**

- P405 - Store locked up.
- P403 + P405 - Store in a well-ventilated place. Store locked up.

**Precautionary Statements - Disposal:**

- P501 - Dispose of contents/ container to an approved waste disposal plant.

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**SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS**

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CAS	Chemical Name	% By Weight
0009016-87-9	POLYMETHYLENE POLYPHENYL ISOCYANATE	52% - 97%
0000101-68-8	4,4'-METHYLENEDIPHENYL DIISOCYANATE	13% - 24%

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**SECTION 4) FIRST-AID MEASURES**

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**Inhalation:**

Remove source of exposure or move person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by the POISON CENTER/doctor.

If exposed/feel unwell/concerned: Call a POISON CENTER/doctor.

Eliminate all ignition sources if safe to do so.

**Skin Contact:**

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Gently blot or brush away excess product. Wash with plenty of lukewarm, gently flowing water for a duration of 15-20 minutes. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before re-use or discard.

IF exposed or concerned: Get medical advice/attention.

**Eye Contact:**

Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.

**Ingestion:**

Rinse mouth. Do NOT induce vomiting. Give 1 or 2 glasses of milk or water to drink and get medical attention/advice.

IF exposed or concerned: Get medical advice/attention.

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**SECTION 5) FIRE-FIGHTING MEASURES**

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**Suitable Extinguishing Media:**

Dry chemical, foam, carbon dioxide is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Sand or earth may be used for small fires only.

**Unsuitable Extinguishing Media:**

If water is used, use very large quantities of cold water. The reaction between water and hot isocyanate may be vigorous.

**Specific Hazards in Case of Fire:**

Excessive pressure or temperature may cause explosive rupture of containers.

Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

**Fire-fighting Procedures:**

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid.

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

**Special Protective Actions:**

Wear NIOSH approved self-contained breathing apparatus in positive pressure mode with full-face piece. Boots, gloves (neoprene), goggles, and full protective clothing are also required.

Care should always be exercised in dust/mist areas.

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**SECTION 6) ACCIDENTAL RELEASE MEASURES**

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**Emergency Procedure:**

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch or walk through spilled material.

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

**Recommended Equipment:**

Positive pressure, full-face piece self-contained breathing apparatus(SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

**Personal Precautions:**

Avoid breathing vapors. Avoid contact with skin, eyes or clothing. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

**Environmental Precautions:**

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

**Methods and Materials for Containment and Cleaning up:**

Cover container, but do not seal, and remove from work area. Prepare a decontamination solution of 2.0% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's safety data sheets.

Treat the spill area with the decontamination solution, using about 10 parts of the solution for each part of the spill, and allow it to react for at least 15 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. Residues from spill cleanup, even when treated as described may continue to be regulated under provisions of RCRA and require storage and disposal as hazardous waste.

Slowly stir the isocyanate waste into the decontamination solution described above. Let stand for 48 hours, allowing the evolved carbon dioxide to vent away, residues may still be subject to RCRA storage and disposal requirements. Dispose off in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

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**SECTION 7) HANDLING AND STORAGE**

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**General:**

- Wash hands after use.
- Do not get in eyes, on skin or on clothing.
- Do not breathe vapors or mists.
- Use good personal hygiene practices.
- Eating, drinking and smoking in work areas is prohibited.
- Remove contaminated clothing and protective equipment before entering eating areas.
- Eyewash stations and showers should be available in areas where this material is used and stored.

**Ventilation Requirements:**

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

**Storage Room Requirements:**

- Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight, strong oxidizers and any incompatibilities. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty container retain residue and may be dangerous.
- Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.
- Keep liquid and vapors away from sparks and flame, store in containers above ground and surrounded by dikes to contain spills or leaks.
- Do not cut, drill, grind, weld, or perform similar operations on or near containers.

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**SECTION 8) EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Eye Protection:**

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

**Skin Protection:**

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

**Respiratory Protection:**

If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied pressure supplied air respiratory with a full face piece or an air supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

**Appropriate Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	OSHA TWA (ppm)	OSHA TWA (mg/m3)	OSHA STEL (ppm)	OSHA STEL (mg/m3)	OSHA Tables (Z1, Z2, Z3)	OSHA Carcinogen	OSHA Skin designation	NIOSH TWA (ppm)	NIOSH TWA (mg/m3)	NIOSH STEL (ppm)	NIOSH STEL (mg/m3)	NIOSH Carcinogen
4,4'-METHYLENEDIPHENYL DIISOCYANATE	0.02 ceiling	0.2 ceiling			1			0.005	0.050			

Chemical Name	ACGIH TWA (ppm)	ACGIH TWA (mg/m3)	ACGIH STEL (ppm)	ACGIH STEL (mg/m3)
4,4'-METHYLENEDIPHENYL DIISOCYANATE	0.005	0.051		

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**SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES**

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**Physical Properties**

- Density 10.22 lb/gal
- Specific Gravity 1.22
- VOC Regulatory 0.00 lb/gal

VOC Part A & B Combined	N.A.
Appearance	Dark Brown Liquid
Odor Threshold	N.A.
Odor Description	Aromatic
pH	N.A.
Water Solubility	Reacts with Water
Flammability	N/A
Flash Point Symbol	N.A.
Flash Point	218 °C
Viscosity	N.A.
Lower Explosion Level	N.A.
Upper Explosion Level	N.A.
Vapor Pressure	N.A.
Vapor Density	Heavier than air
Freezing Point	N.A.
Melting Point	N.A.
Low Boiling Point	N.A.
High Boiling Point	N.A.
Auto Ignition Temp	N.A.
Decomposition Pt	N.A.
Evaporation Rate	Slower than ether
Coefficient Water/Oil	N.A.

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## SECTION 10) STABILITY AND REACTIVITY

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### Stability:

Material is stable at standard temperature and pressure.

### Conditions to Avoid:

Heat, high temperature, open flame, sparks, and moisture. Contact with incompatible materials in a closed system will cause liberation of carbon dioxide and buildup of pressure.

### Hazardous Reactions/Polymerization:

Will not occur under normal conditions but under high temperatures above 204°C, in the presence of moistures, alkalis, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of carbon dioxide gas may rupture closed containers.

### Incompatible Materials:

This product will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis and acids, the reaction with water is slow under 50°C, but is accelerated at higher temperature and in the presence of alkalis, tertiary amines, and metal compounds. Some reactions can be violent. Material can react with strong oxidizing agents.

### Hazardous Decomposition Products:

Carbon dioxide, carbon monoxide, nitrogen oxides, trace amounts of hydrogen cyanide and unidentified organic compounds may be formed during combustion.

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## SECTION 11) TOXICOLOGICAL INFORMATION

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### Skin Corrosion/Irritation:

Isocyanates react with skin protein and moisture and can cause irritation. Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

Causes skin irritation

### Serious Eye Damage/Irritation:

Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. Prolonged vapor contact may cause conjunctivitis. Any level of contact should not be left untreated.

Causes serious eye irritation

### Carcinogenicity:

Suspected of causing cancer.

### Respiratory/Skin Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause an allergic skin reaction

**Germ Cell Mutagenicity:**

No data available

**Reproductive Toxicity:**

No data available

**Specific Target Organ Toxicity - Single Exposure:**

High vapor concentrations may cause central nervous system (CNS) depression as evidenced by giddiness, headache, dizziness, and nausea. Persons with a preexisting, nonspecific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV.

May cause respiratory irritation

**Specific Target Organ Toxicity - Repeated Exposure:**

Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent.

May cause damage to organs through prolonged or repeated exposure.

**Aspiration Hazard:**

No data available

**Acute Toxicity:**

No data available

0000101-68-8            4,4'-METHYLENEDIPHENYL DIISOCYANATE

LC50 (rat): 369-490 mg/m3 (aerosol) (4-hour exposure) (1)  
LC50 (rat): 178 mg/m3 (17.4 ppm) (duration of exposure not reported) (2)  
LD50 (oral, rat): greater than 10,000 mg/kg (1,2)  
LD50 (dermal, rabbit): greater than 10,000 mg/kg (1)  
LD50 (oral, mouse): 2,200 mg/kg (3)

0009016-87-9            POLYMETHYLENE POLYPHENYL ISOCYANATE

LC50 (rat): 490 mg/m3 (aerosol) 4-hour exposure (22)  
LD50 (oral, rat): greater than 10000 mg/kg (PMPPi) (2)  
LD50 (dermal, rabbit): greater than 5 mL/kg (6200 mg/kg) (PMPPi) (2)

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**SECTION 12) ECOLOGICAL INFORMATION**

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**Toxicity:**

No data available.

**Persistence and Degradability:**

No data available.

**Bioaccumulative Potential:**

No data available.

**Mobility in Soil:**

No data available.

**Other Adverse Effects:**

No data available.

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**SECTION 13) DISPOSAL CONSIDERATIONS**

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**Waste Disposal:**

Under RCRA, it is the responsibility of the user of the product, to determine a the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state, and local laws.

Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

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**SECTION 14) TRANSPORT INFORMATION**

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**U.S. DOT Information:**

Not regulated

**IMDG Information:**

Not regulated.

**IATA Information:**

Not regulated.

**SECTION 15) REGULATORY INFORMATION**

CAS	Chemical Name	% By Weight	Regulation List
0009016-87-9	POLYMETHYLENE POLYPHENYL ISOCYANATE	52% - 97%	DSL,SARA312,SARA313,VOC,TSCA
0000101-68-8	4,4'- METHYLENEDIPHENYL DIISOCYANATE	13% - 24%	DSL,CERCLA,HAPS,SARA312,SARA313,VHAPS,VOC,TSCA

**SECTION 16) OTHER INFORMATION****OTHER INFORMATION:**

Note: As per GHS, category 1 is the greatest level of hazard within each class.

**GLOSSARY:**

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDG- Canadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center (US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL- Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self-Contained Breathing Apparatus; STEL- Short Term Exposure Limit; TCEQ - Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA - Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

**DISCLAIMER**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

# SAFETY DATA SHEET

PCF 229-N-2-45S, B-Side  
Apr 19, 2022

## SECTION 1) CHEMICAL PRODUCT AND MANUFACTURER'S IDENTIFICATION

**Product ID:** 10-11048  
**Product Name:** PCF 229-N-2-45S, B-Side  
**Revision Date:** Apr 19, 2022 **Date Printed:** Apr 19, 2022  
**Version:** 1.0 **Supersedes Date:** N.A.  
**Manufacturer's Name:** Polycoat Products  
**Address:** 14722 Spring Ave, Santa Fe Springs, CA, US, 90670-5108  
**Emergency Phone:** Chemtrec:800-424-9300 (account: CCN1217) OR International:703-527-3887 (account:CCN1217)  
**Information Phone Number:** (562) 802-8834  
**Fax:** (562) 921-7363  
**Product/Recommended Uses:** For Further Information, Refer to the Product Technical Data Sheet.

## SECTION 2) HAZARDS IDENTIFICATION

### Classification

Specific Target Organ Toxicity - Repeated Exposure - Category 2

### Pictograms



### Signal Word

Warning

### Hazardous Statements - Health

H373 - May cause damage to organs through prolonged or repeated exposure.

### Precautionary Statements - General

P101 - If medical advice is needed, have product container or label at hand.

P102 - Keep out of reach of children.

P103 - Read label before use.

### Precautionary Statements - Prevention

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.

### Precautionary Statements - Response

P314 - Get Medical advice/attention if you feel unwell.

### Precautionary Statements - Storage

No precautionary statement available.

### Precautionary Statements - Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant.



## SECTION 3) COMPOSITION/INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
0000460-73-1	HFC-245FA	9% - 16%
0000111-46-6	DIETHYLENE GLYCOL	4% - 7%
0000107-21-1	ETHYLENE GLYCOL	Trace

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

## SECTION 4) FIRST-AID MEASURES

### Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by the POISON CENTER/doctor.

If exposed/feel unwell/concerned: Call a POISON CENTER/doctor.

### Skin Contact

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Gently blot or brush away excess product. Wash with plenty of lukewarm, gently flowing water for a duration of 15-20 minutes. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before re-use or discard.

IF exposed or concerned: Get medical advice/attention.

### Eye Contact

Avoid direct contact. Wear chemical protective gloves, if necessary.

Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.

### Ingestion

IF exposed or concerned: Get medical advice/attention.

Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. If vomiting occurs naturally, lie on your side, in the recovery position.

## SECTION 5) FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Sand or earth may be used for small fires only.

### Specific Hazards in Case of Fire

Heated containers may build up pressure and rupture violently. Therefore, use cold water to cool fire-exposed containers.

### Fire-fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid.

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

### Special Protective Actions

Wear NIOSH approved self-contained breathing apparatus in positive pressure mode with full-face piece. Boots, gloves (neoprene), goggles, and full protective clothing are also required.

Care should always be exercised in dust/mist areas.

## SECTION 6) ACCIDENTAL RELEASE MEASURES

### Emergency Procedure

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch or walk through spilled material.

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

### Personal Precautions

Avoid breathing vapors. Avoid contact with skin, eyes or clothing. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

### Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

### Methods and Materials for Containment and Cleaning up

Contain and absorb large spillages onto an inert, non-flammable adsorbent carrier (such as earth or sand). Shovel into open-top drums or plastic bags for further decontamination, if necessary. Wash the spillage area clean with liquid decontaminate. Remove and properly dispose of residues. Notify applicable government authorities if release is reportable.

### Recommended Equipment

Appropriate dust or face mask to eliminate breathing foam dust particulates.

## SECTION 7) HANDLING AND STORAGE

### General

Wash hands after use.

Do not get in eyes, on skin or on clothing.

Do not breathe vapors or mists.

Use good personal hygiene practices.

Eating, drinking and smoking in work areas is prohibited.

Remove contaminated clothing and protective equipment before entering eating areas.

### Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

### Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight, strong oxidizers and any incompatibilities. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty container retain residue and may be dangerous.

Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

Ground and bond containers and receiving equipment. Avoid static electricity by grounding.

Do not cut, drill, grind, weld, or perform similar operations on or near containers. Do not pressurize containers to empty them. Ground all structures, transfer containers and equipment to conform to the national electrical code. Use procedures that prevent static electrical sparks. Static electricity may accumulate and create a fire hazard.

Ideal storage temperature is 50-75°F.

## SECTION 8) EXPOSURE CONTROLS/PERSONAL PROTECTION

### Eye protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

### Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit.

Wash contaminated clothing before re-wearing.

### Respiratory protection

If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied pressure supplied air respiratory with a full face piece or an air supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus.

### Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	OSHA TWA (ppm)	OSHA TWA (mg/m3)	OSHA STEL (ppm)	OSHA STEL (mg/m3)	OSHA Tables (Z1, Z2, Z3)	OSHA Carcinogen	OSHA Skin designation	NIOSH TWA (ppm)
ETHYLENE GLYCOL								
HFC-245FA		2.5			1			

Chemical Name	NIOSH TWA (mg/m3)	NIOSH STEL (ppm)	NIOSH STEL (mg/m3)	NIOSH Carcinogen	ACGIH TWA (ppm)	ACGIH TWA (mg/m3)	ACGIH STEL (ppm)	ACGIH STEL (mg/m3)
ETHYLENE GLYCOL					25 (v)		50 (v)	10 (I,H)
HFC-245FA						2.5		

## SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

### Physical and Chemical Properties

Density	8.94 lb/gal
Specific Gravity	1.07
VOC Regulatory	0.00 lb/gal
<hr/>	
VOC Part A & B Combined	N.A.
Appearance	Pigmented Liquid
Odor Threshold	N.A.
Odor Description	Mild
pH	N.A.
Water Solubility	N.A.
Flammability	N/A
Flash Point Symbol	N.A.
Flash Point	95 °C
Viscosity	N.A.
Lower Explosion Level	N.A.
Upper Explosion Level	N.A.
Vapor Pressure	N.A.
Vapor Density	Heavier than air
Freezing Point	N.A.
Melting Point	N.A.
Low Boiling Point	15 °C
High Boiling Point	N.A.
Auto Ignition Temp	N.A.
Decomposition Pt	N.A.
Evaporation Rate	Slower than ether
Coefficient Water/Oil	N.A.

## SECTION 10) STABILITY AND REACTIVITY

### Conditions To Avoid

Avoid high temperatures, heated material will build pressure and may rupture the container violently.

### Hazardous Reactions/Polymerization

Will not occur.

### Incompatible Materials

This product will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis and acids, the reaction with water is slow under 50°C, but is accelerated at higher temperature and in the presence of alkalis, tertiary amines, and metal compounds.

### Hazardous Decomposition Products

Highly unlikely under normal industrial use. Under extreme heat and fire, carbon monoxide, carbon dioxide.

### Stability

Material is stable at standard temperature and pressure.

## SECTION 11) TOXICOLOGICAL INFORMATION

### Skin Corrosion/Irritation

Based on available data, the classification criteria are not met.

0000111-46-6 DIETHYLENE GLYCOL

May cause mild skin irritation.

### Serious Eye Damage/Irritation

Based on available data, the classification criteria are not met.

### Respiratory/Skin Sensitization

Based on available data, the classification criteria are not met.

### Carcinogenicity

Based on available data, the classification criteria are not met.

### Germ Cell Mutagenicity

Based on available data, the classification criteria are not met.

### Reproductive Toxicity

Based on available data, the classification criteria are not met.

### Specific Target Organ Toxicity - Single Exposure

Based on available data, the classification criteria are not met.

0000111-46-6 DIETHYLENE GLYCOL

Ingestion may cause effects on the central nervous system, the liver, and the kidneys (including kidney impairment).

### Specific Target Organ Toxicity - Repeated Exposure

May cause damage to organs through prolonged or repeated exposure.

0000107-21-1 ETHYLENE GLYCOL

The substance may cause effects on kidneys as a result of repeated ingestion.

### Aspiration Hazard

Based on available data, the classification criteria are not met.

### Acute Toxicity

Based on available data, the classification criteria are not met.

0000111-46-6 DIETHYLENE GLYCOL

Ingestion can lead to death.

### Likely Routes of Exposure

Inhalation, Ingestion, Skin contact, Eye contact

0000107-21-1 ETHYLENE GLYCOL

The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

0000111-46-6 DIETHYLENE GLYCOL

Ingestion.

0000107-21-1 ETHYLENE GLYCOL

LD50 (oral, rat): 5.89 g/kg; 8.54 g/kg; 13.0 g/kg (5)

LD50 (oral, mouse): 7.5 g/kg; 15.28 g/kg (5,6)

LD50 (oral, guinea pig): 6.6 g/kg; 11.0 g/kg (5)

LD50 (oral, rabbit): 5.0 g/kg (5)

LD50 (dermal, rabbit): 9.5 g/kg (6)

## SECTION 12) ECOLOGICAL INFORMATION

### Toxicity

Based on available data, the classification criteria are not met.

### Persistence and Degradability

0000107-21-1 ETHYLENE GLYCOL

Readily biodegradable.

0000111-46-6 DIETHYLENE GLYCOL

Readily biodegradable.

### Bioaccumulative Potential

0000107-21-1 ETHYLENE GLYCOL

No potential for bioaccumulation.

0000111-46-6 DIETHYLENE GLYCOL

Bioaccumulation is not expected.

### Mobility in Soil

0000107-21-1 ETHYLENE GLYCOL

Adsorption to solid soil phase is not expected. Ethylene glycol will preferentially be distributed into the compartment water.

### Other Adverse Effects

No data available.

### Results of the PBT and vPvB assessment

0000107-21-1 ETHYLENE GLYCOL

The substance is not PBT / vPvB.

0000111-46-6 DIETHYLENE GLYCOL

The substance is not PBT / vPvB.

## SECTION 13) DISPOSAL CONSIDERATIONS

### Waste Disposal

Under RCRA, it is the responsibility of the user of the product, to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state, and local laws.

Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

## SECTION 14) TRANSPORT INFORMATION

## U.S. DOT Information

Not regulated.

## IMDG Information

Not regulated.

## IATA Information

Not regulated.

## SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
0000460-73-1	HFC-245FA	9% - 16%	DSL,SARA312,TSCA
0000111-46-6	DIETHYLENE GLYCOL	4% - 7%	DSL,SARA312,VOC,TSCA
0000107-21-1	ETHYLENE GLYCOL	Trace	SARA313, DSL,CERCLA,HAPS,SARA312,VHA PS,VOC,TSCA,CA_Prop65 - California Proposition 65

## SECTION 16) OTHER INFORMATION

### OTHER INFORMATION

Note: As per GHS, category 1 is the greatest level of hazard within each class.

### Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; CA Prop65- California Proposition 65; Canadian TDG- Canadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center (US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL- Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self-Contained Breathing Apparatus; STEL- Short Term Exposure Limit; TCEQ- Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA- Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

ACGIH - American Conference of Governmental Industrial Hygienists; CAS - Chemical Abstracts Service ; Chemtrec - Chemical Transportation Emergency Center; DSL - Domestic Substances List; ESL- Effects screening levels; GHS - "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations; HMIS - Hazardous Material Information Service; IATA - Dangerous Goods Regulations (DGR) for the air transport (IATA); IMDG - International Maritime Dangerous Goods Code; LC - Lethal Concentration; LD - Lethal Dose; NFPA - National Fire Protection Association; OEL - Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL - Permissible Exposure Limit; SARA 313 - Superfund Amendments and Reauthorization Act, Section 313; SCBA - Self Contained Breathing Apparatus; ppm - parts per million; STEL - Short-term exposure limit; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act Public Law 94-469; TWA - Time-weighted average; US DOT- US Department of Transportation.

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