

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : DUOTACK® SPF HFO ADHESIVE (Part A)

1.2. Recommended use and restrictions on use

Low pressure polyurethane spray foam roofing adhesive, A-Side Component, for PROFESSIONAL USE ONLY

1.3. Supplier

Manufacturer: SOPREMA, Inc.
310 Quadral Dr.
Wadsworth, OH 44281
Tel: 1-800-356-3521

SOPREMA USA
12251 Seaway Road
Gulfport (Mississippi)
39507 UNITED STATES
Tel: 1-228-701-1900

Distributors:
SOPREMA Canada
44955 Yale Road West
Chilliwack (BC) V2R 4H3 CANADA
Tel: 1-604-793-7100

SOPREMA Canada
1675 Haggerty Street
Drummondville (Quebec) J2C 5P7
Tel: 1-819-478-8163

1.4. Emergency telephone number

No additional information available

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Unstable explosives	H280	Gases Under Pressure- Compressed Gas
Acute toxicity (inhalation) Category 4	H332	Harmful if inhaled
Skin corrosion/irritation Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation Category 2B	H320	Causes eye irritation
Respiratory sensitization, Category 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Skin sensitization, Category 1	H317	May cause an allergic skin reaction
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335	May cause respiratory irritation
Specific target organ toxicity (repeated exposure) Category 2	H373	May cause damage to organs through prolonged or repeated exposure

Full text of H statements : see section 16

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2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)

: WARNING

Hazard statements (GHS US)

: H280 – Gases Under Pressure- Compressed Gas

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H320 - Causes eye irritation

H332 - Harmful if inhaled

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

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

Precautionary statements (GHS US)

: P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

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

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.

P264 - Wash hands, forearms and face thoroughly after handling.

P271 - Use only outdoors or in a well-ventilated area.

P272 - Contaminated work clothing must not be allowed out of the workplace.

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

P284 - [In case of inadequate ventilation] wear respiratory protection.

P302+P352 - If on skin: Wash with plenty of water.

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.

P304+P341 - If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.

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

P312 - Call a poison center or doctor if you feel unwell.

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

P321 - Specific treatment (see supplemental first aid instruction on this label).

P332+P313 - If skin irritation occurs: Get medical advice/attention.

P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P342+P311 - If experiencing respiratory symptoms: Call a poison center or doctor.

P362+P364 - Take off contaminated clothing and wash it before reuse.

P363 - Wash contaminated clothing before reuse.

P372 - Explosion risk in case of fire.

P373 - DO NOT fight fire when fire reaches explosives.

P380 - Evacuate area.

P401 - Store in accordance with local regulations on explosives.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

P405 - Store locked up.

P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Common Name (Synonyms)	Product identifier	%
Isocyanic acid, polymethylenepolyphenylene ester	Polymethylene polyphenylene isocyanate / Polymeric diphenylmethane diisocyanate / Polymeric MDI / Polymethylene polyphenyl isocyanate / Polymethylenepolyphenyl isocyanate / Polymethylenepolyphenylene isocyanate / Diphenylmethane diisocyanate / Isocyanuric acid polymethylene polyphenyl isocyanate / Polymethylene polyphenylisocyanate / Polymeric methane diphenyl diisocyanate / Polymethyl polyphenyl polyisocyanate / Diphenylmethanediisocyanate / Methylene diphenyl diisocyanate (polymeric) / PMDI / PAPI / Polymeric methylene diphenyl diisocyanate / Polymethylenepolyphenyl polyisocyanate / Methylene bisphenyl diisocyanate, polymer / Diphenylmethane diisocyanate prepolymerized	CAS-No.: 9016-87-9	30 – 60

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Name	Common Name (Synonyms)	Product identifier	%
4,4'-Methylenediphenyl diisocyanate	Benzene, 1,1'-methylenebis[4-isocyanato- / Bis[1-isocyanatobenzene], 4,4'-methylene- / 4,4'-Diisocyanatodiphenylmethane / Diphenylmethane 4,4'-diisocyanate / 4,4'-Diphenylmethane diisocyanate / Diphenylmethane-4,4'-diisocyanate / MDI / 1,1'-Methylenebis(4-isocyanatobenzene) / Methylenebis(4-phenylene isocyanate) / 4,4'-Methylenebis(phenyl isocyanate) / Methylenediphenyl diisocyanate, 4,4'- / Methylenebis(4,1-phenylene) diisocyanate / 4,4'-MDI / Methylenebis(1,4-phenylene) diisocyanate / Methylenebis(4-phenyl isocyanate) / 1-Isocyanato-4-[(4-isocyanatophenyl)methyl]benzene / Methylenebis(4-phenylisocyanate) / Methylene diphenyl diisocyanate / Methylene bisphenylisocyanate / Methylene, 4,4'-diphenyl diisocyanate- / 4,4'-Methylene bis(phenyl isocyanate) / Methylene bisphenyl isocyanate / Bis(4-isocyanatophenyl)methane	CAS-No.: 101-68-8	30 – 60
Tris (1-chloro-2-propyl) Phosphate		CAS- No: 13674-84-5	10-15
Trans-1,3,3,3-tetrafluoroprop-1-ene		CAS-No.: 29118-24-9	5 – 10
Nitrogen		CAS-No.: 7727-37-9	≤ 5

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: Call a poison center/doctor/physician if you feel unwell.
First-aid measures after inhalation	: If product vapors cause respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen. If respiratory arrest occurs, start artificial respiration by a trained individual. Loosen tight fitting clothing such as a jacket or tie. Seek medical attention immediately. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening. Persons receiving significant exposure should be observed for 24-48 hours for signs of respiratory distress..
First-aid measures after skin contact	: Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

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First-aid measures after ingestion : If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/effects after skin contact : Irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact : Mild eye irritation.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically. If case of an accident or if you feel unwell, seek medical advice immediately (show label or SDS if possible). Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high propellant concentrations (enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe victim for the development of cardiac arrhythmias.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Specific hazards arising from the chemical

Explosion hazard : Explosion risk in case of fire.
Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Evacuate area. Do not fight fire when fire reaches explosives.
Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Do not breathe mist/vapors/spray. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product.

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Other information : Dispose of materials or solid residues at an authorized site. Cover drains and contain spill. Cover spilled material with a large quantity of inert absorbent. Collect material and place into an approved, open-head metal container. Decontaminate the spill and waste area with a neutralization solution. Wait 15 minutes. Repeat applications of decontamination solution, with scrubbing, followed by absorbent until the surface is decontaminated. Allow container to vent for 72 hours to let carbon dioxide escape. Dispose of waste via a licensed waste disposal contractor in accordance with all applicable federal, state, provincial and local regulations. Ensure adequate ventilation. Additional spill procedures- neutralization solutions (decontamination): Use ten parts of solution for each part of the spill.
(1) An aqueous solution containing 3-8% ammonium hydroxide or concentrated ammonia and 0.2-0.5% liquid detergent
(2) An aqueous solution containing 5-10% sodium bicarbonate and 0.2-0.5% liquid detergent

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : For Industrial or professional use only. Observe label precautions, do not use until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray during application. Use adequate ventilation to keep airborne isocyanate levels below exposure limits. Recommend wearing respiratory protection when spraying this material. Warning symptoms (irritation of the eyes, nose, or throat, or odor) are not adequate to prevent overexposure from inhalation. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed. Avoid contact with skin or eyes. Wear appropriate personal protective equipment during use (see Section 8). Wash thoroughly after handling product. Do not puncture or incinerate cylinders. Cylinders are under pressure. Keep cylinder valves closed when not in use. Advice on protection against fire and explosion
Contents under pressure. Exposure to high temperatures can cause containers to rupture or explode. Do not puncture or incinerate containers

Hygiene measures : Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry, well-ventilated area and away from incompatible materials (see Section 10.5). Do not store at temperatures above 95°F (35°C) or below 45°F (7.2°C). Do not expose the cylinders to open flame or temperatures above 122°F (50°C); storage at elevated temperatures can cause the container to rupture. Excessive heat can cause premature aging of components resulting in a shorter shelf life. Protect cylinders from physical abuse. Always store the cylinders in the upright position.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available

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Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9)	
No additional information available	
4,4'-Methylenediphenyl diisocyanate (101-68-8)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA [ppm]	0.005 ppm
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (Ceiling)	0.2 mg/m ³
OSHA PEL C [ppm]	0.02 ppm
USA - IDLH - Occupational Exposure Limits	
IDLH	75 mg/m ³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	0.05 mg/m ³
NIOSH REL TWA [ppm]	0.005 ppm
NIOSH REL (Ceiling)	0.2 mg/m ³
NIOSH REL C [ppm]	0.02 ppm
Trans-1,3,3,3-tetrafluoroprop-1-ene (29118-24-9)	
No additional information available	
Nitrogen (7727-37-9)	
No additional information available	

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:
Protective gloves
Eye protection:
Safety glasses
Skin and body protection:
Wear suitable protective clothing
Respiratory protection:
An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type (s) to reduce inhalation exposure: Half face piece or full-face piece supplied-air respirator. For questions about suitability for a specific application, consult with your respirator manufacturer. The odor and irritancy of this material is inadequate to warn of excessive exposure.

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Medical Surveillance: All employees/end-users who work with isocyanates should undergo a medical evaluation. A history of eczema or respiratory allergies are possible reasons for medical exclusion from working with isocyanates. Users with a prior history of isocyanate sensitization should be excluded from further work with isocyanates. Once a user is diagnosed with being sensitized to isocyanates, no further exposure should be permitted.

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Amber to dark brown liquid. Forms an off-white to yellowish froth when released from the container
Odor	: Slightly musty Mixture contains one or more component(s) which have the following odour: earthy musty
Odor threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: Not applicable
Boiling point	: MDI boils at 406°F (208°C); Propellant -19°C (-2.2°F)
Flash point	: MDI >399°F (>204°C) Closed Cup; Propellant does not flash
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: Contents under pressure have a vapor pressure >50 psi (>345kPa) Liquid phase vapor pressure: <1 mm Hg @ 40°C
Relative vapor density at 20 °C	: No data available
Relative density	: ~ 1.23 @ 25°C (Water = 1)
Solubility	: Insoluble; reacts slowly with water during cure, liberating traces of CO2
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

VOC Content EPA Method 24: 98 g/l when mixed as intended with Part B

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

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10.3. Possibility of hazardous reactions

Exposure to elevated temperatures can cause containers to rupture or explode. Avoid moisture, material reacts slowly with water releasing carbon dioxide. Contents are under pressure.

10.4. Conditions to avoid

Temperatures below 60°F (16°C) or temperatures above 90°F (32°C). Avoid heat and flames.

10.5. Incompatible materials

Alcohols, strong bases, amines, metal compounds, ammonia, and strong oxidizers. Avoid contamination with water.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: May be harmful if swallowed. May cause gastrointestinal irritation: stomach distress, nausea, or vomiting.
Acute toxicity (dermal)	: May cause skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin. May cause an allergic reaction. Can cause sensitization. Persons previously sensitized can experience allergic skin reactions. May be harmful if absorbed through the skin.
Acute toxicity (inhalation)	Harmful if inhaled. Isocyanate vapors at concentrations above the concentration limits or guidelines can irritate the mucous membranes in the respiratory tract with symptoms of burning sensation, runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (difficulty breathing). Persons with a pre-existing, nonspecific bronchial hyperactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm, and pulmonary edema (fluid in the lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible; however, increased lung sensitivity may persist for a longer period of time. May be harmful if inhaled. Inhalation of the propellant may cause lightheadedness, headache, and lethargy.

DUOTACK SPF HFO Part A	
ATE US (gases)	4500 ppmV/4h
ATE US (vapors)	11 mg/l/4h
ATE US (dust, mist)	1.5 mg/l/4h
Unknown acute toxicity (GHS US)	60% of the mixture consists of ingredient(s) of unknown acute toxicity (Oral) 60% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9)

LD50 oral rat	49 g/kg
LD50 dermal rabbit	> 9.4 g/kg
LC50 Inhalation - Rat	490 mg/m ³ (Exposure time: 4 h)

4,4'-Methylenediphenyl diisocyanate (101-68-8)

LD50 oral rat	31600 mg/kg
LC50 Inhalation - Rat	369 mg/m ³ (Exposure time: 4 h)

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Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes eye irritation.
Respiratory or skin sensitization	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9)

IARC group	3 - Not classifiable
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4,4'-Methylenediphenyl diisocyanate (101-68-8)

IARC group	3 - Not classifiable
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Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: May cause respiratory irritation.

4,4'-Methylenediphenyl diisocyanate (101-68-8)

Specific target organ toxicity – single exposure	May cause respiratory irritation.
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Specific target organ toxicity – repeated exposure : May cause damage to organs through prolonged or repeated exposure.

4,4'-Methylenediphenyl diisocyanate (101-68-8)

Specific target organ toxicity – repeated exposure	May cause damage to organs through prolonged or repeated exposure.
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Aspiration hazard	: Not classified
Viscosity, kinematic	: Not applicable
Symptoms/effects after inhalation	: May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/effects after skin contact	: Irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact	: Mild eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

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SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Always wear proper protective equipment as you would while spraying the two-component foam in a well-ventilated area.

Procedure for handling empty or partially used disposable cylinders (not returnable):

1. DO NOT INCINERATE CYLINDERS.
2. Empty cylinders by dispensing the foam into a waste container like a cardboard box or plastic bag. Depressurize the used cylinders using the dispensing unit with a new nozzle attached. Spray the foam until one of the components/cylinders no longer sprays chemical.
3. Remove the nozzle and then continue to depressurize by dispensing the remaining chemical(s) into a waste container (a box lined with a plastic bag) that has adequate industrial liquid absorbing medium in the bottom. Dispense the residual chemicals until the pressure is down to a minimum or there are just large bubbles in the hose.
4. Close the cylinder valves completely, and then operate the dispensing unit again to empty and depressurize the hoses. Use a 9/16" wrench and remove the hoses from the cylinders. Use caution in case there is some residual chemical and/or pressure in the hoses.
5. Invert the cylinder and point away from face. Slowly open the cylinder over the waste container to catch any residual spray.
6. Return the cylinder to an upright position. Shake the container; there should not be any sloshing of liquid. Make sure to leave valves OPEN-do not close. DO NOT PUNCTURE.
7. The user of this material has the responsibility to dispose of empty cylinders, unused material and residues in compliance to all applicable federal, state, international and local regulations regarding the treatment, storage, and disposal for hazardous and nonhazardous wastes. Check with your local waste disposal service for guidance.

NOTE: After dispensing if one cylinder has chemical left in it, treat as hazardous material.

SECTION 14: Transport information

In accordance with Department of Transport / Transportation of Dangerous Goods / IMDG / IATA

14.1. UN number

DOT NA No	: UN3500
UN-No. (TDG)	: UN3500
UN-No. (IMDG)	: 3500
UN-No. (IATA)	: 3500

14.2. UN proper shipping name

Proper Shipping Name (DOT)	: Chemical under pressure, n.o.s.
Proper Shipping Name (TDG)	: CHEMICAL UNDER PRESSURE, N.O.S.
Proper Shipping Name (IMDG)	: CHEMICAL UNDER PRESSURE, N.O.S.
Proper Shipping Name (IATA)	: Chemical under pressure, n.o.s.

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT)	: 2.2
Hazard labels (DOT)	: 2.2

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TDG

Transport hazard class(es) (TDG) : 2.2
Hazard labels (TDG) : 2.2



IMDG

Transport hazard class(es) (IMDG) : 2.2
Hazard labels (IMDG) : 2.2



IATA

Transport hazard class(es) (IATA) : 2.2
Hazard labels (IATA) : 2.2



14.4. Packing group

Packing group (DOT) : Not applicable
Packing group (TDG) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN3500

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DOT Special Provisions (49 CFR 172.102)	: 362 - This entry applies to liquids, pastes or powders, pressurized with a propellant that meets the definition of a gas in §173.115. A chemical under pressure packaged in an aerosol dispenser must be transported under UN1950. The chemical under pressure must be classed based on the hazard characteristics of the components in the propellant; the liquid; or the solid. The following provisions also apply: a. If one of the components, which can be a pure substance or a mixture, is classed as flammable, the chemical under pressure must be classed as flammable in Division 2.1. Flammable components are flammable liquids and liquid mixtures, flammable solids and solid mixtures or flammable gases and gas mixtures meeting the following criteria: (1) A flammable liquid is a liquid having a flashpoint of not more than 93 °C (200 °F); (2) A flammable solid is a solid that meets the criteria in §173.124 of this subchapter; or (3) A flammable gas is a gas that meets the criteria in §173.115 of this subchapter. b. Gases of Division 2.3 and gases with a subsidiary risk of 5.1 must not be used as a propellant in a chemical under pressure. c. Where the liquid or solid components are classed as Division 6.1, Packing Group II or III, or Class 8, Packing Group II or III, the chemical under pressure must be assigned a subsidiary risk of Division 6.1 or Class 8 and the appropriate identification number must be assigned. Components classed as Division 6.1, Packing Group I, or Class 8, Packing Group I, must not be offered for transportation and transported under this description. d. A chemical under pressure with components meeting the properties of: Class 1 (explosives); Class 3 (liquid desensitized explosives); Division 4.1 (self-reactive substances and solid desensitized explosives); Division 4.2 (substances liable to spontaneous combustion); Division 4.3 (substances which, in contact with water, emit flammable gases or toxic gases); Division 5.1 (oxidizing substances); Division 5.2 (organic peroxides); Division 6.2 (Infectious substances); or, Class 7 (Radioactive material), must not be offered for transportation under this description. e. A description to which special provision 170 or TP7 is assigned in Column 7 of the §172.101 Hazardous Materials Table, and therefore requires air to be eliminated from the package vapor space by Nitrogen or other means, must not be offered for transportation under this description. f. Chemicals under pressure containing components forbidden for transport on both passenger and cargo aircraft in Columns (9A) and (9B) of the §172.101 Hazardous Materials Table must not be transported by air. T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter. TP40 - The portable tank must not be transported when connected with spray application equipment.
DOT Packaging Exceptions (49 CFR 173.xxx)	: None
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 335
DOT Packaging Bulk (49 CFR 173.xxx)	: 313, 315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 150 kg
DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
TDG UN-No. (TDG)	: UN3500

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TDG Special Provisions	: 16 - (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). (2) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical name: (a) UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S; (b) UN1851, MEDICINE, LIQUID, TOXIC, N.O.S; (c) UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S; (d) UN3248, MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S; or (e) UN3249, MEDICINE, SOLID, TOXIC, N.O.S. (3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment: (a) UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or (b) UN2900, INFECTIOUS SUBSTANCE, AFFECTING ANIMALS, 130 - (1) This shipping name applies to chemicals under pressure, including liquids, pastes or powders that are pressurized with a propellant that meets the criteria set out in section 2.2.1.2 of the UN Recommendations for a compressed gas or a liquefied gas. (2) These dangerous goods must be assigned to (a) primary Class 2.1, Flammable Gases, if one of the components, which can be a pure substance or a mixture, is classified as a flammable component under subsection (3); and (b) subsidiary Class 6.1, Toxic Substances, or Class 8, Corrosives, if one of the liquid or solid components is included in Class 6.1, Toxic Substances, Packing Group II or III, or Class 8, Corrosives, Packing Group II or III. (3) A flammable component is (a) a liquid that has a flashpoint of 60°C or less; (b) a solid that meets the criterion set out in subparagraph 2.21(a)(i) of Part 2 (Classification); and (c) a gas that meets the criteria set out in paragraph 2.14(a) of Part 2 (Classification). (4) This shipping name must not be used to transport (a) gases included in both primary Class 2.3, Toxic Gases, and subsidiary Class 5.1, Oxidizing Substances; (b) substances included in Packing Group I of Class 6.1, Toxic Substances, or Class 8, Corrosives; (c) liquid desensitized explosives included in Class 3, Flammable Liquids; (d) self-reactive substances and solid desensitized explosives included in Class 4.1, Flammable Solids; or (e) dangerous good included in (i) Class 4.2, Substances Liable to Spontaneous Combustion, (ii) Class 4.3, Water-reactive Substances, (iii) Class 5.1, Oxidizing Substances, (iv) Class 5.2, Organic Peroxides, (v) Class 6.2, Infectious Substances, or (vi) Class 7, Radioactive Materials. (5) Dangerous goods to which special packing provision PP86 or TP7 is assigned in Column 9 and Column 11 of the Dangerous Goods List in Chapter 3.2 of the UN Recommendations, and that therefore require air to be eliminated from the vapour space, must not be transported under this shipping name, but must be transported under their respective shipping names as listed in the Dangerous Goods List of Chapter 3.2 of the UN Recommendations.
Explosive Limit and Limited Quantity Index	: 0
Excepted quantities (TDG)	: E0
Emergency Response Guide (ERG) Number	: 126

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IMDG	
Special provision (IMDG)	: 274, 362
Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P206
Tank instructions (IMDG)	: T50
Tank special provisions (IMDG)	: TP4, TP40
EmS-No. (Fire)	: F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES
EmS-No. (Spillage)	: S-V - SPILLAGE SCHEDULE Victor - GASES (NON-FLAMMABLE, NON-TOXIC)
Stowage category (IMDG)	: B
Properties and observations (IMDG)	: Liquids, pastes or powders, pressurized with a propellant which meets the definition of a gas.

IATA	
PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 218
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 218
CAO max net quantity (IATA)	: 150kg
Special provision (IATA)	: A187
ERG code (IATA)	: 2L

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

U.S. Federal Regulations:

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910-1200

TSCA Status: All components of this product are listed on the Toxic Substance Control Act (TSCA) Inventory. This product is not subject to TSCA 12(b) Export Notification.

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories: Acute Health Hazard, Chronic Health Hazard, Sudden Release of Pressure Hazard

SARA 313 Information: MDI and PMDI are subject to reporting levels established by Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: No components of the product exceed the threshold (de minimis) reporting levels established by these sections of the Title III of SARA.

SARA 302/304 Emergency Planning & Notification: No components of the product exceed the threshold (de minimis) report levels established by these sections of the Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This product contains the following CERCLA reportable substances: 4,4'-Diphenylmethane diisocyanate (CAS #101-68-8), RQ- 2,268 kg (5,000 lbs).

Clean Air Act (CAA) - 4,4'- Diphenylmethane diisocyanate (CAS #101-68-8) is listed as a Hazardous Air Pollutant (HAP) designated in CAA Section 112 (b). This product does not contain any Class 1 or Class 2 Ozone depletors.

Clean Water Act (CWA) - 4,4'- Diphenylmethane diisocyanate (CAS #101-68-8) is listed as a Hazardous Substance under the CWA. None of the chemicals in these products are listed as Priority Pollutants under the CWA. None of the chemicals listed in these products are listed as Toxic Pollutants under the CWA.

U.S. State Regulations:

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986: None of the ingredients are listed.

Other U.S. State Inventories:

4, 4'- Diphenylmethane diisocyanate (CAS #101-68-8) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/air Pollutants lists: CA, DE, ID, IL, ME, MA, MN, NJ, PA, WA, WI

Polymeric MDI (CAS #9016-87-9) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: DE, NJ, MN

Canadian Ingredient Disclosure List (IDL): 4,4'- Diphenylmethane diisocyanate (CAS #101-68-8) is listed on the IDL.

Canadian National Pollutant Release Inventory (NPRI): MDI and PMDI are listed on the NPRI

Global Chemical Inventory Lists:

United States: Toxic Substance Control Act (TSCA)- Yes

Canada: Domestic Substances List (DSL)- Yes

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Canada: Non-Domestic Substances List (NDSL)- No

15.2. International regulations

CANADA

Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9)

Listed on the Canadian DSL (Domestic Substances List)

4,4'-Methylenediphenyl diisocyanate (101-68-8)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

4,4'-Methylenediphenyl diisocyanate (101-68-8)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

4,4'-Methylenediphenyl diisocyanate (101-68-8)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Component	State or local regulations
Isocyanic acid, polymethylenepolyphenylene ester(9016-87-9)	U.S. - New Jersey - Right to Know Hazardous Substance List
4,4'-Methylenediphenyl diisocyanate(101-68-8)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List

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SECTION 16: Other information

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Full text of H-phrases	
H280	Gases Under Pressure- Compressed Gas
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H320	Causes eye irritation
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.