

**PURLOGIC FLEX, Cold-weather insulating foam, 581 g**

Version 7.1      Revision Date: 11/03/2022      SDS Number: 10802066-00010      Date of last issue: 06/27/2022  
Date of first issue: 03/06/2017

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**SECTION 1. IDENTIFICATION**

Product name : PURLOGIC FLEX, Cold-weather insulating foam, 581 g  
Product code : 892.1428  
Other means of identification : No data available

**Manufacturer or supplier's details**

Company name of supplier : Würth Canada Limited  
Address : 345 Hanlon Creek Blvd  
GUELPH, ON N1C 0A1  
Telephone : +1 (905) 564 6225  
Telefax : +1 (905) 564 3671  
Emergency telephone : Emergencies involving a spill, fire, explosion or exposure:  
CHEMTREC (24/7): 1-800-424-9300  
Transport related emergencies:  
CANUTEC (24/7): 1-613-996-6666 or \* 666 (cell)  
  
Urgences impliquant un déversement, incendie, explosion ou exposition:  
CHEMTREC (24/7): 1-800-424-9300  
Urgences liées au transport:  
CANUTEC (24/7): 1-613-996-6666 ou \* 666 (cellulaire)  
  
E-mail address : prodsafe@wurth.ca

**Recommended use of the chemical and restrictions on use**

Recommended use : Sealant

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**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the Hazardous Products Regulations**

Flammable aerosols : Category 1  
Gases under pressure : Dissolved gas  
Specific target organ toxicity - single exposure : Category 3  
Acute toxicity (Oral) : Category 4  
Acute toxicity (Inhalation) : Category 4  
Respiratory sensitization : Category 1

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Skin sensitization : Category 1

Carcinogenicity : Category 2

Specific target organ toxicity - repeated exposure (Inhalation) : Category 2 (Respiratory Tract)

Eye irritation : Category 2B

Skin irritation : Category 2

**GHS label elements**

Hazard pictograms :



Signal Word : Danger

Hazard Statements :

H222 Extremely flammable aerosol.  
H280 Contains gas under pressure; may explode if heated.  
H302 + H332 Harmful if swallowed or if inhaled.  
H315 + H320 Causes skin and eye irritation.  
H317 May cause an allergic skin reaction.  
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 (Respiratory Tract) through prolonged or repeated exposure if inhaled.

Precautionary Statements :

**Prevention:**

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P211 Do not spray on an open flame or other ignition source.  
P251 Do not pierce or burn, even after use.  
P260 Do not breathe spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P280 Wear protective gloves, protective clothing, eye protection and face protection.  
P284 Wear respiratory protection.

**Response:**

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P301 + P312 + P330 IF SWALLOWED: Call a doctor if you feel unwell. Rinse mouth.  
 P302 + P352 IF ON SKIN: Wash with plenty of water.  
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P308 + P313 IF exposed or concerned: Get medical attention.  
 P333 + P313 If skin irritation or rash occurs: Get medical attention.  
 P337 + P313 If eye irritation persists: Get medical attention.  
 P342 + P311 If experiencing respiratory symptoms: Call a doctor.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**

P405 Store locked up.  
 P410 + P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C (122 °F).

**Disposal:**

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

**Other hazards**

Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

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

Substance / Mixture : Mixture

**Components**

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
Diphenylmethane diisocyanate, isomers and homologues	Polymethylene polyphenyl polyisocyanate	9016-87-9	>= 30 - < 60 *
Phosphorous oxychloride, reaction products with propylene oxide	2-Propanol, 1-chloro-, 2,2',2''-phosphate	1244733-77-4	>= 10 - < 30 *
4,4'-Diphenylmethane diisocyanate	Benzene, 1,1'-methylenebis[4-isocyanato-	101-68-8	>= 5 - < 10 *
Dimethyl ether	Methane, 1,1'-oxybis-	115-10-6	>= 5 - < 10 *
Isobutane	Propane, 2-methyl-	75-28-5	>= 5 - < 10 *
Propane	Dimethylme-	74-98-6	>= 1 - < 5 *

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Diethylene glycol	thane 2,2' - Oxybisethanol	111-46-6	$\geq 1 - < 5$ *
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\* Actual concentration or concentration range is withheld as a trade secret

**Alternative CAS Numbers for some regions**

Chemical name	Alternative CAS Number(s)
Phosphorous oxychloride, reaction products with propylene oxide	13674-84-5

**SECTION 4. FIRST AID MEASURES**

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
 When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.  
 If not breathing, give artificial respiration.  
 If breathing is difficult, give oxygen.  
 Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
 Get medical attention.  
 Wash clothing before reuse.  
 Thoroughly clean shoes before reuse.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.  
 If easy to do, remove contact lens, if worn.  
 Get medical attention.
- If swallowed : If swallowed, DO NOT induce vomiting.  
 Get medical attention.  
 Rinse mouth thoroughly with water.  
 Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.  
 Causes skin and eye irritation.  
 May cause an allergic skin reaction.  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 May cause respiratory irritation.  
 Suspected of causing cancer.  
 May cause damage to organs through prolonged or repeated exposure if inhaled.  
 Respiratory symptoms, including pulmonary edema, may be delayed.  
 Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

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Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

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**SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical  
Water spray in large fire situations

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire fighting : Flash back possible over considerable distance.  
Vapors may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.  
If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.

Hazardous combustion products : Carbon oxides  
Nitrogen oxides (NO<sub>x</sub>)  
Isocyanates  
Hydrogen cyanide (hydrocyanic acid)  
Chlorine compounds  
Oxides of phosphorus

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use water spray to cool unopened containers.  
Remove undamaged containers from fire area if it is safe to do so.  
Evacuate area.

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Remove all sources of ignition.  
Use personal protective equipment.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions : Avoid release to the environment.  
Prevent further leakage or spillage if safe to do so.  
Prevent spreading over a wide area (e.g., by containment or oil barriers).  
Retain and dispose of contaminated wash water.

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Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up :

- Non-sparking tools should be used.
- Soak up with inert absorbent material.
- Suppress (knock down) gases/vapors/mists with a water spray jet.
- For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- After approximately one hour, transfer to waste container and do not seal, due to evolution of carbon dioxide.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

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**SECTION 7. HANDLING AND STORAGE**

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.  
If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

Advice on safe handling :

- Do not get on skin or clothing.
- Do not breathe spray.
- Do not swallow.
- Do not get in eyes.
- Wash skin thoroughly after handling.
- Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
- Keep container tightly closed.
- Keep away from water.
- Protect from moisture.
- Already sensitized individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitizers.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Take precautionary measures against static discharges.
- Do not eat, drink or smoke when using this product.
- Take care to prevent spills, waste and minimize release to the environment.

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Do not spray on an open flame or other ignition source.

Do not breathe decomposition products.

Conditions for safe storage : Store locked up.  
 Protect from moisture.  
 Keep in a cool, well-ventilated place.  
 Store in accordance with the particular national regulations.  
 Do not pierce or burn, even after use.  
 Keep cool. Protect from sunlight.

Materials to avoid : Do not store with the following product types:  
 Self-reactive substances and mixtures  
 Organic peroxides  
 Oxidizing agents  
 Flammable solids  
 Pyrophoric liquids  
 Pyrophoric solids  
 Self-heating substances and mixtures  
 Substances and mixtures which in contact with water emit flammable gases  
 Explosives  
 Gases

Recommended storage temperature : > 0 - 40 °C

Storage period : 12 Months

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**
**Ingredients with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Diphenylmethane diisocyanate, isomers and homologues	9016-87-9	TWA	0.005 ppm 0.07 mg/m <sup>3</sup>	CA AB OEL
		TWAEV	0.005 ppm 0.051 mg/m <sup>3</sup>	CA QC OEL
		TWA	0.005 ppm	CA BC OEL
4,4'-Diphenylmethane diisocyanate	101-68-8	C	0.01 ppm	CA BC OEL
		TWA	0.005 ppm	CA BC OEL
		C	0.02 ppm	CA ON OEL
		TWAEV	0.005 ppm 0.051 mg/m <sup>3</sup>	CA QC OEL
		TWA	0.005 ppm	ACGIH
Dimethyl ether	115-10-6	TWA	1,000 ppm	CA BC OEL
Isobutane	75-28-5	TWA	1,000 ppm	CA AB OEL

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		TWA	1,000 ppm	CA BC OEL
		STEL	1,000 ppm	ACGIH
Propane	74-98-6	TWA	1,000 ppm	CA AB OEL
		TWAEV	1,000 ppm 1,800 mg/m <sup>3</sup>	CA QC OEL

**Occupational exposure limits of decomposition products**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Formaldehyde	50-00-0	TWA	0.75 ppm 0.9 mg/m <sup>3</sup>	CA AB OEL
		(c)	1 ppm 1.3 mg/m <sup>3</sup>	CA AB OEL
		TWA	0.1 ppm	CA BC OEL
		STEL	0.3 ppm	CA BC OEL
		STEL	1 ppm	CA ON OEL
		C	1.5 ppm	CA ON OEL
		C	2 ppm 3 mg/m <sup>3</sup>	CA QC OEL
		TWA	0.1 ppm	ACGIH
		STEL	0.3 ppm	ACGIH
		Methanol	67-56-1	TWA
STEL	250 ppm 328 mg/m <sup>3</sup>			CA AB OEL
TWA	200 ppm			CA BC OEL
STEL	250 ppm			CA BC OEL
STEV	250 ppm 328 mg/m <sup>3</sup>			CA QC OEL
TWAEV	200 ppm 262 mg/m <sup>3</sup>			CA QC OEL
TWA	200 ppm			ACGIH
STEL	250 ppm			ACGIH

**Engineering measures** : Processing may form hazardous compounds (see section 10).  
 Minimize workplace exposure concentrations.  
 If sufficient ventilation is unavailable, use with local exhaust ventilation.  
 If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

**Personal protective equipment**

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Self-contained breathing apparatus



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- Hand protection
- Material : Polyethylene
  - Break through time : 10 min
  - Glove thickness : 0.025 mm
- Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
- Eye protection : Wear the following personal protective equipment:  
Safety goggles
- Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.  
Wear the following personal protective equipment:  
If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic protective clothing.  
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
- Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.  
When using do not eat, drink or smoke.  
Contaminated work clothing should not be allowed out of the workplace.  
Wash contaminated clothing before re-use.
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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

- Appearance : aerosol
- Propellant : Isobutane, Dimethyl ether, Propane
- Color : gray
- Odor : characteristic
- Odor Threshold : No data available
- pH : substance/mixture is non-soluble (in water)
- Melting point/freezing point : No data available
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Initial boiling point and boiling range : Not applicable

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : Extremely flammable aerosol.

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : Not applicable

Relative vapor density : > 1

Relative density : 0.9 (20 °C)

Density : 0.9 g/cm<sup>3</sup> (20 °C)

Solubility(ies)

    Water solubility : insoluble

    Solubility in other solvents : soluble  
    Solvent: organic solvents

Partition coefficient: n-octanol/water : Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

Viscosity

    Viscosity, kinematic : Not applicable

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Particle size : Not applicable

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**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable if used as directed. Follow precautionary advice and

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avoid incompatible materials and conditions.  
 Polymerizes at high temperatures with evolution of carbon dioxide.

Possibility of hazardous reactions : Extremely flammable aerosol.  
 Vapors may form explosive mixture with air.  
 Isocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can become violent. Contact is increased by stirring or if the other material mixes with the isocyanate.  
 Exothermic reaction with acids, amines and alcohols  
 Reacts with water to form carbon dioxide and heat  
 Isocyanates are not soluble in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea.  
 If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.  
 Hazardous decomposition products will be formed upon contact with water or humid air.  
 Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid : Exposure to moisture.  
 Heat, flames and sparks.

Incompatible materials : Oxidizing agents  
 Acids  
 Bases  
 Water  
 Alcohols  
 Amines  
 Ammonia  
 Aluminum  
 Zinc  
 Brass  
 Tin  
 Copper  
 Galvanized metals  
 Humid air

**Hazardous decomposition products**

Thermal decomposition : Formaldehyde  
 Methanol

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**SECTION 11. TOXICOLOGICAL INFORMATION**
**Information on likely routes of exposure**

Inhalation  
 Skin contact  
 Ingestion  
 Eye contact

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**Acute toxicity**

Harmful if swallowed or if inhaled.

**Product:**

Acute oral toxicity : Acute toxicity estimate: 1,976 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 19.08 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: Calculation method

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 2.24 mg/l  
Exposure time: 1 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Phosphorous oxychloride, reaction products with propylene oxide:**

Acute oral toxicity : LD50 (Rat): 500 - 2,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 7 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

**4,4'-Diphenylmethane diisocyanate:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 2.24 mg/l  
Exposure time: 1 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Remarks: Based on data from similar materials

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**Dimethyl ether:**

Acute inhalation toxicity : LC50 (Rat): 164000 ppm  
Exposure time: 4 h  
Test atmosphere: gas

**Isobutane:**

Acute inhalation toxicity : LC50 (Mouse): 260200 ppm  
Exposure time: 4 h  
Test atmosphere: gas

**Propane:**

Acute inhalation toxicity : LC50 (Rat): > 800000 ppm  
Exposure time: 15 min  
Test atmosphere: gas

**Diethylene glycol:**

Acute oral toxicity : Acute toxicity estimate (Humans): 1,120 mg/kg  
Method: Expert judgment

**Skin corrosion/irritation**

Causes skin irritation.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Species : Rabbit  
Result : Skin irritation

**Phosphorous oxychloride, reaction products with propylene oxide:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

**4,4'-Diphenylmethane diisocyanate:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : Skin irritation  
Remarks : Based on data from similar materials

**Diethylene glycol:**

Species : Rabbit  
Result : No skin irritation

**Serious eye damage/eye irritation**

Causes eye irritation.

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**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Result : Irritation to eyes, reversing within 7 days

**Phosphorous oxychloride, reaction products with propylene oxide:**

Species : Rabbit  
Result : No eye irritation  
Method : OECD Test Guideline 405

**4,4'-Diphenylmethane diisocyanate:**

Result : Irritation to eyes, reversing within 7 days  
Remarks : Based on national or regional regulation.

**Diethylene glycol:**

Species : Rabbit  
Result : No eye irritation

**Respiratory or skin sensitization****Skin sensitization**

May cause an allergic skin reaction.

**Respiratory sensitization**

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Test Type : Buehler Test  
Routes of exposure : Skin contact  
Species : Guinea pig  
Result : positive  
Remarks : Based on data from similar materials

Assessment : Probability or evidence of skin sensitization in humans

Routes of exposure : inhalation (dust/mist/fume)  
Species : Rat  
Result : positive

Assessment : Probability of respiratory sensitization in humans based on animal testing

**Phosphorous oxychloride, reaction products with propylene oxide:**

Test Type : Local lymph node assay (LLNA)  
Routes of exposure : Skin contact  
Species : Mouse  
Method : OECD Test Guideline 429  
Result : negative

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**4,4'-Diphenylmethane diisocyanate:**

Test Type : Buehler Test  
Routes of exposure : Skin contact  
Species : Guinea pig  
Result : positive

Assessment : Probability or evidence of skin sensitization in humans

Routes of exposure : Inhalation  
Species : Rat  
Result : positive  
Remarks : Based on data from similar materials

Assessment : Probability of respiratory sensitization in humans based on animal testing

**Diethylene glycol:**

Test Type : Maximization Test  
Routes of exposure : Skin contact  
Species : Guinea pig  
Method : Directive 67/548/EEC, Annex V, B.6.  
Result : negative

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Method: OECD Test Guideline 474  
Result: negative

**Phosphorous oxychloride, reaction products with propylene oxide:**

Genotoxicity in vitro : Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)  
Method: OECD Test Guideline 482  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: positive

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse

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Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 474  
Result: negative

**4,4'-Diphenylmethane diisocyanate:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Method: OECD Test Guideline 474  
Result: negative

**Dimethyl ether:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

Genotoxicity in vivo : Test Type: Sex-linked recessive lethal test in *Drosophila melanogaster* (in vivo)  
Application Route: inhalation (gas)  
Result: negative

**Isobutane:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: negative  
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 474  
Result: negative  
Remarks: Based on data from similar materials

**Propane:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative



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Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 474  
Result: negative

**Diethylene glycol:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Chromosome aberration test in vitro  
Result: negative

Test Type: In vitro sister chromatid exchange assay in mammalian cells  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 474  
Result: negative

**Carcinogenicity**

Suspected of causing cancer.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Species : Rat  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 2 Years  
Result : positive

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

**4,4'-Diphenylmethane diisocyanate:**

Species : Rat  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 2 Years  
Result : positive  
Remarks : Based on data from similar materials

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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**Dimethyl ether:**

Species : Rat  
Application Route : inhalation (vapor)  
Exposure time : 2 Years  
Result : negative

**Diethylene glycol:**

Species : Rat  
Application Route : Ingestion  
Exposure time : 108 weeks  
Result : negative

**Reproductive toxicity**

Not classified based on available information.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Result: negative

**Phosphorous oxychloride, reaction products with propylene oxide:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 416  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rabbit  
Application Route: Ingestion  
Method: OECD Test Guideline 414  
Result: negative

**4,4'-Diphenylmethane diisocyanate:**

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Result: negative  
Remarks: Based on data from similar materials

**Dimethyl ether:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

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Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

**Isobutane:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Inhalation  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

**Propane:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

**Diethylene glycol:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Mouse  
Application Route: Ingestion  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rabbit  
Application Route: Ingestion  
Method: OECD Test Guideline 414  
Result: negative

**STOT-single exposure**

May cause respiratory irritation.

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**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Assessment : May cause respiratory irritation.

**4,4'-Diphenylmethane diisocyanate:**

Assessment : May cause respiratory irritation.

**Dimethyl ether:**

Assessment : May cause drowsiness or dizziness.

**Isobutane:**

Assessment : May cause drowsiness or dizziness.

**Propane:**

Assessment : May cause drowsiness or dizziness.

**STOT-repeated exposure**

May cause damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.

**Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Routes of exposure : inhalation (dust/mist/fume)  
Target Organs : Respiratory Tract  
Assessment : Shown to produce significant health effects in animals at concentrations of >0.02 to 0.2 mg/l/6h/d.

**Phosphorous oxychloride, reaction products with propylene oxide:**

Assessment : No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

**4,4'-Diphenylmethane diisocyanate:**

Routes of exposure : inhalation (dust/mist/fume)  
Target Organs : Respiratory Tract  
Assessment : Shown to produce significant health effects in animals at concentrations of >0.02 to 0.2 mg/l/6h/d.

**Repeated dose toxicity****Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Species : Rat  
NOAEL : 1.4 mg/m<sup>3</sup>  
LOAEL : 4.1 mg/m<sup>3</sup>  
Application Route : inhalation (dust/mist/fume)

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Exposure time : 13 Weeks

**Phosphorous oxychloride, reaction products with propylene oxide:**

Species : Rat  
LOAEL : 52 mg/kg  
Application Route : Ingestion  
Exposure time : 13 Weeks

**4,4'-Diphenylmethane diisocyanate:**

Species : Rat  
NOAEL : 0,2 mg/m<sup>3</sup>  
LOAEL : 1 mg/m<sup>3</sup>  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 2 y  
Remarks : Based on data from similar materials

**Dimethyl ether:**

Species : Rat  
NOAEL : 47.11 mg/l  
Application Route : inhalation (vapor)  
Exposure time : 2 y

**Isobutane:**

Species : Rat  
NOAEL : 9000 ppm  
Application Route : inhalation (gas)  
Exposure time : 6 Weeks  
Method : OECD Test Guideline 422

**Propane:**

Species : Rat  
NOAEL : 7.214 mg/l  
Application Route : inhalation (gas)  
Exposure time : 6 Weeks  
Method : OECD Test Guideline 422

**Diethylene glycol:**

Species : Rat  
NOAEL : 300 mg/kg  
Application Route : Ingestion  
Exposure time : 98 Days

Species : Dog  
NOAEL : 2,220 mg/kg  
Application Route : Skin contact  
Exposure time : 4 Weeks  
Method : OECD Test Guideline 410  
Remarks : Based on data from similar materials

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**Aspiration toxicity**

Not classified based on available information.

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**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1,000 mg/l  
Exposure time: 96 h

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 10 mg/l  
Exposure time: 21 d

**Phosphorous oxychloride, reaction products with propylene oxide:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 51 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 131 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 82 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 42 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 32 mg/l  
Exposure time: 21 d

Toxicity to microorganisms : EC50: 784 mg/l  
Exposure time: 3 h  
Method: ISO 8192

**4,4'-Diphenylmethane diisocyanate:**

Toxicity to fish : LC50 (Oryzias latipes (Orange-red killifish)): > 3,000 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 129.7 mg/l  
Exposure time: 24 h

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Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

NOEC (Desmodesmus subspicatus (green algae)): 1,640 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 10 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50: > 100 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209  
Remarks: Based on data from similar materials

**Dimethyl ether:**

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): > 4,100 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 4,400 mg/l  
Exposure time: 48 h

Toxicity to microorganisms : EC10 (Pseudomonas putida): > 1,600 mg/l

**Diethylene glycol:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 75,200 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10,000 mg/l  
Exposure time: 24 h  
Method: DIN 38412

Toxicity to algae/aquatic plants : NOEC (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): > 1 mg/l  
Exposure time: 7 d  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 1 mg/l  
Exposure time: 21 d  
Remarks: Based on data from similar materials

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**Persistence and degradability****Components:****Diphenylmethane diisocyanate, isomers and homologues:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d

**Phosphorous oxychloride, reaction products with propylene oxide:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 14 %  
Exposure time: 28 d  
Method: Directive 67/548/EEC Annex V, C.4.D.

**4,4'-Diphenylmethane diisocyanate:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 302  
Remarks: Based on data from similar materials

**Dimethyl ether:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

**Isobutane:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 385.5 h  
Remarks: Based on data from similar materials

**Propane:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 385.5 h  
Remarks: Based on data from similar materials

**Diethylene glycol:**

Biodegradability : Result: Readily biodegradable.

**Bioaccumulative potential****Components:****Phosphorous oxychloride, reaction products with propylene oxide:**



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Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 0.8 - 14

Partition coefficient: n-octanol/water : log Pow: 2.68

**4,4'-Diphenylmethane diisocyanate:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 200

Partition coefficient: n-octanol/water : log Pow: 4.51

**Dimethyl ether:**

Partition coefficient: n-octanol/water : log Pow: 0.2

**Isobutane:**

Partition coefficient: n-octanol/water : log Pow: 2.8

**Diethylene glycol:**

Partition coefficient: n-octanol/water : log Pow: -1.98  
Remarks: Calculation

**Mobility in soil**

No data available

**Other adverse effects**

No data available

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**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Empty containers retain residue and can be dangerous.  
Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death.  
If not otherwise specified: Dispose of as unused product.  
Please ensure aerosol cans are sprayed completely empty (including propellant)

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**SECTION 14. TRANSPORT INFORMATION****International Regulations****UNRTDG**

UN number	:	UN 1950
Proper shipping name	:	AEROSOLS
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1

**IATA-DGR**

UN/ID No.	:	UN 1950
Proper shipping name	:	Aerosols, flammable
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	Flammable Gas
Packing instruction (cargo aircraft)	:	203
Packing instruction (passenger aircraft)	:	203

**IMDG-Code**

UN number	:	UN 1950
Proper shipping name	:	AEROSOLS
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1
EmS Code	:	F-D, S-U
Marine pollutant	:	no

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

Not applicable for product as supplied.

**Domestic regulation****TDG**

UN number	:	UN 1950
Proper shipping name	:	AEROSOLS
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1
ERG Code	:	126
Marine pollutant	:	no

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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### SECTION 15. REGULATORY INFORMATION

**The ingredients of this product are reported in the following inventories:**

DSL : All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL).

### SECTION 16. OTHER INFORMATION

**Full text of other abbreviations**

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
CA AB OEL	: Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	: Canada. British Columbia OEL
CA ON OEL	: Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
CA QC OEL	: Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
CA AB OEL / TWA	: 8-hour Occupational exposure limit
CA AB OEL / STEL	: 15-minute occupational exposure limit
CA AB OEL / (c)	: ceiling occupational exposure limit
CA BC OEL / TWA	: 8-hour time weighted average
CA BC OEL / STEL	: short-term exposure limit
CA BC OEL / C	: ceiling limit
CA ON OEL / C	: Ceiling Limit (C)
CA ON OEL / TWA	: Time-Weighted Average Limit (TWA)
CA ON OEL / STEL	: Short-Term Exposure Limit (STEL)
CA QC OEL / TWAEV	: Time-weighted average exposure value
CA QC OEL / STEV	: Short-term exposure value
CA QC OEL / C	: Ceiling

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships;

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n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

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Date format : mm/dd/yyyy

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

CA / Z8