



# SAFETY DATA SHEET

## THE DOW CHEMICAL COMPANY

**Product name:** DOWANOL™ PNB Glycol Ether

**Issue Date:** 06/23/2025

**Print Date:** 06/24/2025

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## 1. IDENTIFICATION

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**Product name:** DOWANOL™ PNB Glycol Ether

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

**Identified uses:** Industrial solvent for cleaner and coating formulations. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

### **COMPANY IDENTIFICATION**

THE DOW CHEMICAL COMPANY  
2211 H.H. DOW WAY  
MIDLAND MI 48674  
UNITED STATES

**Customer Information Number:**

800-258-2436  
SDSQuestion@dow.com

### **EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** CHEMTREC +1 800-424-9300

**Local Emergency Contact:** 800-424-9300

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## 2. HAZARDS IDENTIFICATION

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### **Hazard classification**

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids - Category 4

Skin irritation - Category 2

Eye irritation - Category 2B

### **Label elements**

**Hazard pictograms**



Signal word: **WARNING!**

**Hazards**

H227 Combustible liquid.  
H315 + H320 Causes skin and eye irritation.

**Precautionary statements**

**Prevention**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

**Response**

P302 + P352 IF ON SKIN: Wash with plenty of water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

**Storage**

P403 Store in a well-ventilated place.

**Disposal**

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

**Other hazards**

No data available

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

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**Synonyms:** Propylene Glycol Butyl Ether

This product is a substance.

**Substance name:** 1-Butoxy-2-propanol

**CASRN:** 5131-66-8

Component	CASRN	Concentration
1-Butoxy-2-propanol	5131-66-8	> 95.0 - < 100.0 %

2-Butoxy-1-propanol

15821-83-7

&gt; 1.0 - &lt;= 5.0 %

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## 4. FIRST AID MEASURES

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### Description of first aid measures

#### General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air and keep comfortable for breathing; consult a physician.

**Skin contact:** Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

#### Most important symptoms and effects, both acute and delayed:

Causes skin and eye irritation.

#### Indication of any immediate medical attention and special treatment needed

**Notes to physician:** If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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## 5. FIREFIGHTING MEASURES

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### Extinguishing media

**Suitable extinguishing media:** Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers.. Foam.. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective..

**Unsuitable extinguishing media:** No data available

### Special hazards arising from the substance or mixture

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.. Combustion products may include and are not limited to:.. Carbon monoxide.. Carbon dioxide..

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids..

### Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible without hazard.. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source..

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. If protective equipment is not available or not used, fight fire from a protected location or safe distance..

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## 6. ACCIDENTAL RELEASE MEASURES

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### **Personal precautions, protective equipment and emergency procedures:**

Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. No smoking in area. Keep personnel out of low areas. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep away from heat, sparks and flame. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

**Conditions for safe storage:** Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

### Storage stability

**Storage Period:**

24 Month

**Bulk**

6 Month

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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**Control parameters**

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
1-Butoxy-2-propanol	Dow IHG	TWA	50 ppm
2-Butoxy-1-propanol	Dow IHG	TWA	50 ppm

**Exposure controls**

**Engineering controls:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

**Individual protection measures**

**Eye/face protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance**

<b>Physical state</b>	Liquid.
<b>Color</b>	Colorless
<b>Odor</b>	Ether
<b>Odor Threshold</b>	No test data available

pH	No test data available
Melting point/ range	-85 °C ( -121 °F) <i>Literature</i>
Freezing point	< -80 °C ( < -112 °F) <i>Literature</i>
Boiling point (760 mmHg)	171 °C ( 340 °F) at 1,013 hPa <i>Literature</i>
Flash point	<b>closed cup</b> 62.5 °C ( 144.5 °F) at 721.0343 hPa <i>ASTM D3278</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	1.1 % vol <i>Literature</i>
Upper explosion limit	8.4 % vol <i>Literature</i>
Vapor Pressure	1.05 mmHg at 25 °C (77 °F) <i>Literature</i>
Relative Vapor Density (air = 1)	4.6 <i>Literature</i>
Relative Density (water = 1)	0.878 at 25 °C (77 °F) / 25 °C <i>ASTM D891</i>
Water solubility	52 g/L at 20 °C (68 °F) <i>Literature</i>
Partition coefficient: n-octanol/water	log Pow: 1.2 <i>Measured</i>
Auto-ignition temperature	260 °C (500 °F) <i>Literature</i>
Decomposition temperature	No test data available
Dynamic Viscosity	2.8 mPa.s at 25 °C (77 °F) <i>Literature</i>
Kinematic Viscosity	3.85 mm <sup>2</sup> /s at 20 °C (68 °F) <i>Literature</i>
Explosive properties	Not explosive
Oxidizing properties	No
Molecular weight	132.2 g/mol <i>Literature</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** No data available

**Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

**Possibility of hazardous reactions:** Polymerization will not occur.

**Conditions to avoid:** Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible materials:** Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to:.. Aldehydes.. Ketones.. Organic acids..

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## 11. TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data are available.*

### Information on likely routes of exposure

Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

#### Acute Toxicity Endpoints:

Not classified based on available information.

#### Acute oral toxicity

##### Information for the Product:

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Based on product testing:

LD50, Rat, male and female, 3,300 mg/kg

##### Information for components:

###### 1-Butoxy-2-propanol

Based on product testing: LD50, Rat, male and female, 3,300 mg/kg

###### 2-Butoxy-1-propanol

Single dose oral LD50 has not been determined.

For similar material(s): LD50, Rat, male and female, 3,300 mg/kg

#### Acute dermal toxicity

##### Information for the Product:

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Based on product testing:

LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

##### Information for components:

###### 1-Butoxy-2-propanol

Based on product testing: LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

**2-Butoxy-1-propanol**

For similar material(s): LD50, Rat, male and female, > 2,000 mg/kg

**Acute inhalation toxicity**

**Information for the Product:**

Brief exposure (minutes) is not likely to cause adverse effects. Based on the available data, respiratory irritation was not observed.

Based on product testing:

LC0, Rat, 4 Hour, vapour, > 3.5 mg/l No deaths occurred at this concentration.

**Information for components:**

**1-Butoxy-2-propanol**

Brief exposure (minutes) is not likely to cause adverse effects. For respiratory irritation and narcotic effects: No relevant data found.

LC50, Rat, 4 Hour, vapour, > 3.52 mg/l No deaths occurred at this concentration.

**2-Butoxy-1-propanol**

For similar material(s): LC0, Rat, 4 Hour, vapour, > 3.5 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**

Causes skin irritation.

**Information for the Product:**

Based on product testing:

Brief contact may cause moderate skin irritation with local redness.

**Information for components:**

**1-Butoxy-2-propanol**

Brief contact may cause moderate skin irritation with local redness.

**2-Butoxy-1-propanol**

Brief contact may cause moderate skin irritation with local redness.

**Serious eye damage/eye irritation**

Causes eye irritation.

**Information for the Product:**

Based on product testing:

May cause moderate eye irritation.

May cause slight corneal injury.

Effects are likely to heal readily.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**Information for components:**

**1-Butoxy-2-propanol**

May cause moderate eye irritation.

May cause slight corneal injury.

Effects are likely to heal readily.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**2-Butoxy-1-propanol**

May cause moderate eye irritation.

May cause slight corneal injury.

Effects may be slow to heal.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**Sensitization**

**For skin sensitization:**

Not classified based on available information.

**For respiratory sensitization:**

Not classified based on available information.

**Information for the Product:**

For skin sensitization:

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Information for components:**

**1-Butoxy-2-propanol**

For similar material(s):

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**2-Butoxy-1-propanol**

For similar material(s):

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Not classified based on available information.

**Information for the Product:**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Information for components:**

**1-Butoxy-2-propanol**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**2-Butoxy-1-propanol**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Aspiration Hazard**

Not classified based on available information.

**Information for the Product:**

Based on physical properties, not likely to be an aspiration hazard.

**Information for components:**

**1-Butoxy-2-propanol**

Based on physical properties, not likely to be an aspiration hazard.

**2-Butoxy-1-propanol**

Based on physical properties, not likely to be an aspiration hazard.

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)**

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Not classified based on available information.

**Information for the Product:**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Information for components:**

**1-Butoxy-2-propanol**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**2-Butoxy-1-propanol**

For similar material(s):

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Carcinogenicity**

Not classified based on available information.

**Information for the Product:**

For similar material(s): Did not cause cancer in laboratory animals.

**Information for components:**

**1-Butoxy-2-propanol**

For similar material(s): Did not cause cancer in laboratory animals.

**2-Butoxy-1-propanol**

No relevant data found.

**Teratogenicity**

Not classified based on available information.

**Information for the Product:**

Did not cause birth defects or any other fetal effects in laboratory animals.

**Information for components:**

**1-Butoxy-2-propanol**

Did not cause birth defects or any other fetal effects in laboratory animals.

**2-Butoxy-1-propanol**

For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

Not classified based on available information.

**Information for the Product:**

For similar material(s): In animal studies, did not interfere with reproduction.

**Information for components:**

**1-Butoxy-2-propanol**

For similar material(s): In animal studies, did not interfere with reproduction.

**2-Butoxy-1-propanol**

For similar material(s): In animal studies, did not interfere with reproduction.

**Mutagenicity**

Not classified based on available information.

**Information for the Product:**

Based on product testing: In vitro genetic toxicity studies were negative.

**Information for components:**

**1-Butoxy-2-propanol**

In vitro genetic toxicity studies were negative.

**2-Butoxy-1-propanol**

For similar material(s): In vitro genetic toxicity studies were negative.

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## 12. ECOLOGICAL INFORMATION

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*Ecotoxicological information appears in this section when such data are available.*

### Toxicity

#### Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, *Poecilia reticulata* (guppy), static test, 96 Hour, > 560 - 1,000 mg/l, OECD Test Guideline 203 or Equivalent

#### Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

#### Acute toxicity to algae/aquatic plants

EC50, *Pseudokirchneriella subcapitata* (green algae), static test, 96 Hour, Growth inhibition (cell density reduction), > 1,000 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, *Pseudokirchneriella subcapitata* (green algae), static test, 96 Hour, Growth inhibition (cell density reduction), 560 mg/l, OECD Test Guideline 201 or Equivalent

#### Toxicity to bacteria

EC50, Bacteria, static test, 3 Hour, > 1,000 mg/l

### Persistence and degradability

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 90 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301E or Equivalent

**Theoretical Oxygen Demand:** 2.42 mg/mg

#### Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	1.1 - 1.6 %
15 d	6.6 - 33.3 %

### Bioaccumulative potential

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1.2 at 20 °C Measured

### Mobility in soil

**Partition coefficient (Koc):** 1.3 - 6.0 Estimated.

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### 13. DISPOSAL CONSIDERATIONS

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**Disposal methods:** DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN SDS SECTION 1: Identified Uses. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

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### 14. TRANSPORT INFORMATION

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**DOT**

<b>Proper shipping name</b>	Combustible liquid, n.o.s.(PROPYLENE GLYCOL MONOBUTYL ETHER)
<b>UN number</b>	NA 1993
<b>Class</b>	CBL
<b>Packing group</b>	III

**Classification for SEA transport (IMO-IMDG):**

	Not regulated for transport
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## 15. REGULATORY INFORMATION

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### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Flammable (gases, aerosols, liquids, or solids)

Skin corrosion or irritation

Serious eye damage or eye irritation

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### Pennsylvania Worker and Community Right-To-Know Act:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

### California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

### United States TSCA Inventory (TSCA)

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

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## 16. OTHER INFORMATION

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### Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact.

### Hazard Rating System

#### NFPA

Health	Flammability	Instability
1	2	0

### Revision

Identification Number: 20853 / A001 / Issue Date: 06/23/2025 / Version: 9.0

In case this version of the SDS contains significant changes from the previous version, they are listed below or noted by bold, double bars in the left-hand margin throughout this document.

Changes encompass identification, hazards, tox/eco-tox information and the addition/removal of the ingredients, and regulatory information, hazard information, uses, risk management measures and other key regulatory changes of the product. Detailed explanation of the changes can be obtained upon request.

**Legend**

Dow IHG	Dow Industrial Hygiene Guideline
TWA	Time weighted average

**Full text of other abbreviations**

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - 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

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other

than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.  
US