



## SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: 2-chloro-2,3-dimethylbutane

Issue Date: 10/23/2025

Print Date: 10/23/2025

### RESEARCH SAMPLE.

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: 2-chloro-2,3-dimethylbutane

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

Identified uses: Research sample.

**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 2

Acute toxicity - Category 3 - Oral

Acute toxicity - Category 3 - Inhalation

Acute toxicity - Category 3 - Dermal

Skin irritation - Category 2

Eye irritation - Category 2A

Skin sensitisation - Sub-category 1B

Carcinogenicity - Category 2

Specific target organ toxicity - single exposure - Category 3

Aspiration hazard - Category 1

Short-term (acute) aquatic hazard - Category 1

Long-term (chronic) aquatic hazard - Category 1

**Label elements****Hazard pictograms**Signal word: **DANGER!****Hazards**

- H225      Highly flammable liquid and vapour.  
H301 + H311      Toxic if swallowed, in contact with skin or if inhaled.  
+ H331  
H304      May be fatal if swallowed and enters airways.  
H315      Causes skin irritation.  
H317      May cause an allergic skin reaction.  
H319      Causes serious eye irritation.  
H335      May cause respiratory irritation.  
H351      Suspected of causing cancer.  
H410      Very toxic to aquatic life with long lasting effects.

**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.  
P233      Keep container tightly closed.  
P240      Ground and bond container and receiving equipment.  
P241      Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242      Use non-sparking tools.  
P243      Take action to prevent static discharges.  
P261      Avoid breathing mist or vapours.  
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 must not be allowed out of the workplace.  
P273      Avoid release to the environment.  
P280      Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

**Response**

- P301 + P310      IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.  
+ P330  
P303 + P361      IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
+ P353  
P304 + P340      IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
+ P311  
P305 + P351      IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
+ P338  
P308 + P313      IF exposed or concerned: Get medical advice/ attention.

P331            Do NOT induce vomiting.  
P333 + P313    If skin irritation or rash occurs: Get medical advice/ attention.  
P337 + P313    If eye irritation persists: Get medical advice/ attention.  
P361 + P364    Take off immediately all contaminated clothing and wash it before reuse.  
P370 + P378    In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.  
P391            Collect spillage.

**Storage**

P403 + P233    Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235    Store in a well-ventilated place. Keep cool.  
P405            Store locked up.

**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:** substance

This product is a substance.

Component	CASRN	Concentration
2-Chloro-2,3-dimethylbutane	594-57-0	>= 96.0 - <= 100.0 %

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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. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical attention if symptoms occur or irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Suitable emergency safety shower facility should be immediately available.

**Eye contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay.

preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

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

Toxic if swallowed, in contact with skin or if inhaled. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer.

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. Hemodialysis may be of benefit if substantial amounts have been ingested and the patient is showing signs of intoxication. Consider hemodialysis for patients with persistent hypotension or coma unresponsive to standard therapy (isopropanol levels >400 - 500 mg/dl). (Goldfrank, Toxicological Emergencies 7th ed., 2002; King, JAMA, 1970, 211:1855). May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Because rapid absorption may occur through the lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. 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:** Alcohol-resistant foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Dry sand.

**Unsuitable extinguishing media:** High volume water jet. Do not use direct water stream..

**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** No hazardous combustion products are known.

**Unusual Fire and Explosion Hazards:** Flash back possible over considerable distance.. Exposure to combustion products may be a hazard to health.. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.. Flammable mixtures may exist within the vapor space of containers at room temperature.. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat.. Vapours may form explosive mixtures with air..

**Advice for firefighters**

**Fire Fighting Procedures:** Use water spray to cool unopened containers.. Evacuate area.. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Do not use a solid water stream as it may scatter and spread fire..

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Remove undamaged containers from fire area if it is safe to do so.

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

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## 6. ACCIDENTAL RELEASE MEASURES

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

Remove all sources of ignition. Ventilate the area. Use personal protective equipment. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. Follow safe handling advice and personal protective equipment recommendations.

**Environmental precautions:** Do not release the product to the aquatic environment above defined regulatory levels. 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. 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/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbant. 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. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.

See sections: 7, 8, 11, 12 and 13.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Do not get on skin or clothing. Do not breathe vapours or spray mist. Do not swallow. Do not get in eyes. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ground and bond container and receiving equipment.

**Conditions for safe storage:** Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Do not store with the following product types: Strong oxidizing agents. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives. Gases. Unsuitable materials for containers: None known.

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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.

**Exposure controls**

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. 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.

**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, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance**

<b>Physical state</b>	Liquid.
<b>Color</b>	Colorless to yellow
<b>Odor</b>	Sweet
<b>Odor Threshold</b>	No test data available
<b>pH</b>	No data available
<b>Melting point/ range</b>	No data available.
<b>Freezing point</b>	No data available.
<b>Boiling point (760 mmHg)</b>	No data available
<b>Flash point</b>	<b>closed cup</b> 14.9 °C ( 58.8 °F) at 760 mmHg <i>Estimated.</i> <b>open cup</b> 14.9 °C ( 58.8 °F) at 760 mmHg <i>Estimated.</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	Not available
<b>Flammability (solid, gas)</b>	Not Applicable
<b>Flammability (liquids)</b>	Not expected to be a static-accumulating flammable liquid.
<b>Lower explosion limit</b>	Liquid.
<b>Upper explosion limit</b>	Liquid.

<b>Vapor Pressure</b>	No data available
<b>Relative Vapor Density (air = 1)</b>	No data available
<b>Relative Density (water = 1)</b>	No data available
<b>Water solubility</b>	Not applicable
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	No data available
<b>Kinematic Viscosity</b>	No data available
<b>Explosive properties</b>	No data available
<b>Oxidizing properties</b>	No data available
<b>Molecular weight</b>	<i>Not reported</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:** Not classified as a reactivity hazard.

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** Can react with strong oxidizing agents. Vapours may form explosive mixture with air. Highly flammable liquid and vapour.

**Conditions to avoid:** Avoid static discharge. Heat, flames and sparks.

**Incompatible materials:** Avoid contact with oxidizing materials.

**Hazardous decomposition products:** No hazardous decomposition products are known..

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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**

Inhalation, Eye contact, Skin contact, Ingestion.

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

**Acute Toxicity Endpoints:**

Toxic if swallowed, in contact with skin or if inhaled.

**Acute oral toxicity**

**Information for the Product:**

Moderate 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 serious injury, even death. Swallowing may result in gastrointestinal irritation.

For similar material(s):

LD50, > 50 mg/kg

Single dose oral LD50 has not been determined.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

Single dose oral LD50 has not been determined.

For similar material(s): LD50, Rat, 110 mg/kg

**Acute dermal toxicity**

**Information for the Product:**

Prolonged or widespread skin contact may result in absorption of harmful amounts.

The dermal LD50 has not been determined.

For similar material(s):

LD50, > 1,000 - 2,000 mg/kg

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

The dermal LD50 has not been determined.

For similar material(s): LD50, Rabbit, 333 mg/kg

For similar material(s): LD50, Rat, 1,200 mg/kg

**Acute inhalation toxicity**

**Information for the Product:**

The LC50 has not been determined.

Prolonged excessive exposure may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown. Lethargy.

For similar material(s):

LC50, 4 Hour, Aerosol, > 1 - 5 mg/l

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

The LC50 has not been determined.

**Skin corrosion/irritation**

Causes skin irritation.

**Information for the Product:**

Based on data from similar materials

Brief contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

For similar material(s):

Brief contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Information for the Product:**

Based on data from similar materials

May cause severe eye irritation.

May cause slight corneal injury.

Vapor may cause lacrimation (tears).

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

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

For similar material(s):

May cause severe eye irritation.

May cause slight corneal injury.

Vapor may cause lacrimation (tears).

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

**Sensitization**

**For skin sensitization:**

May cause an allergic skin reaction.

**For respiratory sensitization:**

Not classified based on available information.

**Information for the Product:**

For similar material(s):

Skin contact may cause an allergic skin reaction.

**For respiratory sensitization:**

No relevant data found.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

For skin sensitization:

For similar material(s):

May cause sensitisation by skin contact.

For respiratory sensitization:

No relevant data found.

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

May cause respiratory irritation.

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

For similar material(s):

**Aspiration Hazard**

May be fatal if swallowed and enters airways.

**Information for the Product:**

May be fatal if swallowed and enters airways. Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

**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:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

For similar material(s):

In animals, effects have been reported on the following organs:  
Bladder.  
Liver.  
Lung.  
Gastrointestinal tract.  
Respiratory tract.  
Nasal tissue.  
Blood-forming organs (Bone marrow & Spleen).

### **Carcinogenicity**

Suspected of causing cancer.

#### **Information for the Product:**

Product test data not available.

#### **Information for components:**

##### **2-Chloro-2,3-dimethylbutane**

For similar material(s): Has been shown to cause cancer in laboratory animals by the oral route. Inhalation exposure resulted in an increase in the normal occurrence of benign lung tumors in male mice.

### **Teratogenicity**

Not classified based on available information.

#### **Information for the Product:**

Product test data not available.

#### **Information for components:**

##### **2-Chloro-2,3-dimethylbutane**

For similar material(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

### **Reproductive toxicity**

Not classified based on available information.

#### **Information for the Product:**

Product test data not available.

#### **Information for components:**

##### **2-Chloro-2,3-dimethylbutane**

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

### **Mutagenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

For similar material(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal 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**

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

**Acute toxicity to fish**

For similar material(s):

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

**Persistence and degradability**

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

**Biodegradability:** For similar material(s): Biodegradation may occur under aerobic conditions (in the presence of oxygen).

**Bioaccumulative potential**

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

**Bioaccumulation:** No relevant data found.

**Mobility in soil**

**Information for the Product:**

Product test data not available.

**Information for components:**

**2-Chloro-2,3-dimethylbutane**

No relevant data found.

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## **13. DISPOSAL CONSIDERATIONS**

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**Disposal methods:** NOTICE: Research sample for use by qualified personnel only. Upon completion of tests, dispose of material and container safely and in accord with federal, state/provincial and local laws and regulations. If further information is needed on disposal or use, consult your supplier.

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## **14. TRANSPORT INFORMATION**

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**DOT**

<b>Proper shipping name</b>	Flammable liquids, toxic, n.o.s.(2-Chloro-2,3-dimethylbutane)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II

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

<b>Proper shipping name</b>	FLAMMABLE LIQUID, TOXIC, N.O.S.(2-Chloro-2,3-dimethylbutane)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II
<b>Marine pollutant</b>	2-Chloro-2,3-dimethylbutane
<b>Special precautions for user</b>	EmS: F-E, S-D
<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):**

<b>Proper shipping name</b>	Flammable liquid, toxic, n.o.s.(2-Chloro-2,3-dimethylbutane)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II

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)

Acute toxicity (any route of exposure)

Respiratory or skin sensitisation

Carcinogenicity

Aspiration hazard

Specific target organ toxicity (single or repeated exposure)

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)**

This product contains chemical substance(s) not on the TSCA Inventory. It may be used for research and development purposes only, and only under the supervision of a technically qualified individual. All persons engaged in research and development with this product must be informed of the hazard information in this Material Safety Data Sheet (MSDS).

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## **16. OTHER INFORMATION**

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### **Other information**

For research use only.

**Revision**

Identification Number: 99202791 / A001 / Issue Date: 10/23/2025 / Version: 0.0

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.

**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); EC<sub>x</sub> - Concentration associated with x% response; EHS - Extremely Hazardous Substance; EL<sub>x</sub> - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErC<sub>x</sub> - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised 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 Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; 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 - Organisation 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