



# SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** METHYLENE CHLORIDE, TECHNICAL

**Issue Date:** 03/04/2015

**Print Date:** 03/07/2015

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:** METHYLENE CHLORIDE, TECHNICAL

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

**Identified uses:** Industrial solvent. Dow does NOT approve this product for direct sales to the general public.

**COMPANY IDENTIFICATION**

THE DOW CHEMICAL COMPANY  
2030 WILLARD H DOW CENTER  
MIDLAND MI 48674-0000  
UNITED STATES

**Customer Information Number:**

800-258-2436

SDSQuestion@dow.com

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** 800-424-9300

**Local Emergency Contact:** 989-636-4400

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## 2. HAZARDS IDENTIFICATION

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**Hazard classification**

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Skin irritation - Category 2

Eye irritation - Category 2A

Carcinogenicity - Category 2

Specific target organ toxicity - single exposure - Category 3

Specific target organ toxicity - repeated exposure - Category 2

**Label elements**

**Hazard pictograms**



Signal word: **WARNING!**

**Hazards**

Causes skin irritation.  
Causes serious eye irritation.  
May cause respiratory irritation.  
May cause drowsiness or dizziness.  
Suspected of causing cancer.  
May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements**

**Prevention**

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear eye protection/ face protection.  
Wear protective gloves.  
Use personal protective equipment as required.

**Response**

IF ON SKIN: Wash with plenty of soap and water.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF exposed or concerned: Get medical advice/ attention.  
If skin irritation occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.

**Storage**

Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.

**Disposal**

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

**Other hazards**

Toxic fumes may be released in fire situations.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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**Synonyms:** methylene chloride

This product is a substance.

Component	CASRN	Concentration
Dichloromethane (methylene chloride)	75-09-2	99.9%

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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. 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:** Wash off with plenty of water.

**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:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. Treat with 100% oxygen. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. 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. 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. Carboxyhemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemia. Skin contact may aggravate preexisting dermatitis.

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## 5. FIREFIGHTING MEASURES

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**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Water fog, applied gently may be used as a blanket for fire extinguishment.

**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: Hydrogen chloride. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Phosgene. Chlorine.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. Although this material does not have a flash point, it can burn at room temperature. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. 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. Water fog, applied gently may be used as a blanket for fire extinguishment.

**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. Keep personnel out of low areas. Keep personnel out of confined or poorly ventilated areas. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Confined space entry procedures must be followed before entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

## 7. HANDLING AND STORAGE

**Precautions for safe handling:** Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. 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. Do not enter confined spaces unless adequately ventilated. To avoid uncontrolled emissions, vent vapor from container to storage tank. Vapors of this product are heavier than air and lethal concentrations of vapors can collect in low, confined and unventilated spaces such as tanks, pits, small rooms and even in equipment (degreasers) that is used for degreasing metal parts. Do not enter these confined spaces where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Store under cover in a dry, clean, cool, well ventilated place away from sunlight. Do not handle or store near an open flame, heat, or sources of ignition. Keep container tightly closed when not in use. Do not store in: Zinc. Aluminum. Aluminum alloys. Plastic.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Dichloromethane (methylene chloride)	ACGIH	TWA	50 ppm
	ACGIH	TWA	BEI
	OSHA Z-2		
	OSHA CARC	PEL	25 ppm
	OSHA CARC	STEL	125 ppm
	OSHA Z-1		

### 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 in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

### 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: Polyvinyl alcohol ("PVA"). Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. 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:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Appearance

Physical state	Liquid.
Color	Clear
Odor	Characteristic
Odor Threshold	250 ppm <i>Literature</i>
pH	Not applicable
Melting point/range	-96.7 °C (-142.1 °F) <i>Literature</i>
Freezing point	-96.7 °C (-142.1 °F) <i>Literature</i>
Boiling point (760 mmHg)	39.8 °C (103.6 °F) <i>Literature</i>
Flash point	<b>closed cup</b> <i>Tag Closed Cup ASTM D56</i> None
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Lower explosion limit	14 % vol <i>Literature</i>
Upper explosion limit	22 % vol <i>Literature</i>
Vapor Pressure	355 mmHg at 20 °C (68 °F) <i>Literature</i>
Relative Vapor Density (air = 1)	2.93 <i>Literature</i>
Relative Density (water = 1)	1.320 at 25 °C (77 °F) / 25 °C <i>Literature</i>
Water solubility	1.3 % at 25 °C (77 °F) <i>Literature</i>
Partition coefficient: n-octanol/water	log Pow: 1.25 <i>Measured</i>
Auto-ignition temperature	556 °C (1,033 °F) <i>Literature</i>
Decomposition temperature	No test data available
Dynamic Viscosity	0.41 mPa.s <i>Literature</i>
Kinematic Viscosity	0.31 mm <sup>2</sup> /s at 25 °C (77 °F) <i>Calculated.</i>
Explosive properties	Not explosive
Oxidizing properties	No
Molecular weight	84.94 g/mol <i>Literature</i>
Percent volatility	100 % <i>Literature</i>
Particle size	Not applicable to liquids

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:** Exposure to elevated temperatures can cause product to decompose. Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition. Avoid direct sunlight or ultraviolet sources.

**Incompatible materials:** Avoid contact with oxidizing materials. Avoid contact with: Strong bases. Water contamination may cause corrosion of metals due to formation of hydrochloric acid. Avoid contact with metals such as: Zinc powders. Aluminum powders. Magnesium powders. Potassium. Sodium. Avoid unintended contact with: Amines.

**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: Hydrogen chloride. Decomposition products can include trace amounts of: Chlorine. Phosgene.

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## 11. TOXICOLOGICAL INFORMATION

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*Toxicological information on this product or its components appear in this section when such data is available.*

### Acute toxicity

#### Acute oral toxicity

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.

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

#### Acute dermal toxicity

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

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

#### Acute inhalation toxicity

In confined or poorly ventilated areas, vapor can readily accumulate and can cause unconsciousness and death. Vapor may cause irritation of the upper respiratory tract (nose and throat). May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen. Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness, and as low as 10,000 ppm, unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

LC50, Mouse, 4 Hour, vapour, 86 mg/l

**Skin corrosion/irritation**

Brief contact may cause moderate skin irritation with local redness.  
May cause more severe response on covered skin (under clothing, gloves).  
Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.  
Extensive skin contact with methylene chloride, such as immersion, may cause an intense burning sensation, followed by a cold, numb feeling which will subside after contact.  
May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause moderate eye irritation which may be slow to heal.  
May cause slight corneal injury.  
Vapor may cause eye irritation experienced as mild discomfort and redness.

**Sensitization**

For skin sensitization:  
No relevant data found.

For respiratory sensitization:  
Relevant data not available.

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

May cause drowsiness or dizziness.  
Route of Exposure: Inhalation  
Target Organs: Central nervous system

May cause respiratory irritation.  
Route of Exposure: Inhalation  
Target Organs: Respiratory Tract

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

In animals, effects have been reported on the following organs:  
Kidney.  
Liver.  
Blood.  
May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

**Carcinogenicity**

Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Other animal studies on methylene chloride alone, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to humans when handled as recommended. Studies have shown that tumors observed in mice are unique to that species. Studies in workers with combined exposures to methylene chloride and 1,2-dichloropropane have reported increased incidences of cholangiocarcinoma.

**Teratogenicity**

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.



**Reproductive toxicity**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Negative or equivocal results have been obtained in genetic toxicity tests with methylene chloride using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

**Aspiration Hazard**

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

**Carcinogenicity**

Component	List	Classification
Dichloromethane (methylene chloride)	IARC	Group 2B: Possibly carcinogenic to humans
	US NTP	Reasonably anticipated to be a human carcinogen
	OSHA CARC	OSHA specifically regulated carcinogen
	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

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## 12. ECOLOGICAL INFORMATION

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*Ecotoxicological information on this product or its components appear in this section when such data is available.*

**Toxicity****Acute toxicity to fish**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 193 mg/l

**Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), static test, 27 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**

EbC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Biomass, > 662 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**

EC50, activated sludge, static test, 40 min, 2,590 mg/l, OECD 209 Test

**Chronic aquatic toxicity****Chronic toxicity to fish**

NOEC, Pimephales promelas (fathead minnow), flow-through test, 28 d, growth, 83 mg/l

**Persistence and degradability**

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

10-day Window: Pass

**Biodegradation:** 68 %

**Exposure time:** 28 d

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

10-day Window: Not applicable

**Biodegradation:** 66 %

**Exposure time:** 50 Hour

**Method:** Simulation study

**Theoretical Oxygen Demand:** 0.38 mg/mg

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)

**Sensitizer:** OH radicals

**Atmospheric half-life:** 79 - 110 d

**Method:** Estimated.

**Bioaccumulative potential**

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

**Partition coefficient: n-octanol/water(log Pow):** 1.25 at 20 °C Measured

**Bioconcentration factor (BCF):** 2 - 40 Fish. Measured

**Mobility in soil**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient(Koc):** 46.8 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 solely 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 MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

**Contaminated packaging:** 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.

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**14. TRANSPORT INFORMATION**

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**DOT**

<b>Proper shipping name</b>	Dichloromethane
<b>UN number</b>	UN 1593
<b>Class</b>	6.1

<b>Packing group</b>	III
<b>Reportable Quantity</b>	Dichloromethane

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

<b>Proper shipping name</b>	DICHLOROMETHANE
<b>UN number</b>	UN 1593
<b>Class</b>	6.1
<b>Packing group</b>	III
<b>Marine pollutant</b>	No
<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>	Dichloromethane
<b>UN number</b>	UN 1593
<b>Class</b>	6.1
<b>Packing group</b>	III

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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**OSHA Hazard Communication Standard**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

Acute Health Hazard  
Chronic Health Hazard

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

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

**Components**

Dichloromethane (methylene chloride)

**CASRN**

75-09-2

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)  
Section 103**

Components	CASRN	RQ
Dichloromethane (methylene chloride)	75-09-2	1000 lbs RQ

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

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
Dichloromethane (methylene chloride)	75-09-2

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Components	CASRN
Dichloromethane (methylene chloride)	75-09-2

**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. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

**Revision**

Identification Number: 101198687 / A001 / Issue Date: 03/04/2015 / Version: 11.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
OSHA CARC	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	USA. Occupational Exposure Limits (OSHA) - Table Z-2
PEL	Permissible exposure limit (PEL)
STEL	Excursion limit
TWA	8-hour, time-weighted average

**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.