



SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY*

Product name: CR 9-101

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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.

1. IDENTIFICATION

Product name: CR 9-101

Recommended use of the chemical and restrictions on use

Identified uses: Packaging laminating adhesives

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY*
Agent for Rohm and Haas Chemicals LLC
400 ARCOLA ROAD
COLLEGEVILLE PA 19426-2914
UNITED STATES

Customer Information Number:

215-592-3000
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 1 800 424 9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

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

Acute toxicity - Category 4 - Inhalation

Skin sensitisation - Category 1

Specific target organ toxicity - single exposure - Category 3

Label elements

Hazard pictograms



Signal word: **WARNING!**

Hazards

May cause an allergic skin reaction.
Harmful if inhaled.
May cause respiratory irritation.

Precautionary statements

Prevention

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

Response

IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing 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

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Isocyanates

This product is a mixture.

Component	CASRN	Concentration
1,6-diisocyanatohexane, homopolymer	28182-81-2	>= 75.0 - <= 85.0 %
Aliphatic polyisocyanates	Not available	>= 15.0 - <= 25.0 %
Hexamethylene diisocyanate	822-06-0	<= 0.2 %

4. FIRST AID MEASURES

Description of first aid measures

Inhalation: Remove to fresh air. In case of shortness of breath, give oxygen. Immediate medical attention is required.

Skin contact: Wash off immediately with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. If skin irritation persists, call a physician. Wash contaminated clothing before re-use. Do not take clothing home to be laundered.

Eye contact: Rinse immediately with plenty of water for at least 15 minutes. If eye irritation persists, consult a specialist.

Ingestion: Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician immediately. If a person vomits when lying on his back, place him in the recovery position.

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: Bronchial constriction may develop after extensive exposure to isocyanates, even in individuals who have not been shown to be previously sensitized.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, irritating and highly toxic gases and/or fumes may be generated during combustion or decomposition.

Unusual Fire and Explosion Hazards: Do not allow run-off from fire fighting to enter drains or water courses. Closed containers may explode when heated or contents contaminated with water.

Advice for firefighters

Fire Fighting Procedures: Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Ventilate the area. Refer to protective measures listed in sections 7 and 8. MATERIAL IS A POTENTIAL SENSITIZER.

Environmental precautions: Try to prevent the material from entering drains or water courses. Do not contaminate surface water.

Methods and materials for containment and cleaning up: Ventilate the area. Evacuate personnel to safe areas. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert

materials (e.g., sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.
No conditions to be specially mentioned.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with skin and eyes. For personal protection see section 8. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

Conditions for safe storage: Keep container tightly closed. Store in a cool, dry, well ventilated place. Keep from freezing.

Other data: This material is a potential skin sensitizer. See SECTION 8, Exposure Controls/Personal Protection, prior to handling.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
1,6-diisocyanatohexane, homopolymer	Dow IHG	TWA	0.1 mg/m ³
	Dow IHG	TWA	DSEN, RSEN
	Dow IHG	STEL	0.3 mg/m ³
	Dow IHG	STEL	DSEN, RSEN
Hexamethylene diisocyanate	Dow IHG	TWA	0.005 ppm
	Dow IHG	TWA	DSEN, RSEN
	Dow IHG	TLV-C	0.02 ppm
	Dow IHG	TLV-C	DSEN, RSEN
	ACGIH	TWA	0.005 ppm
	ACGIH	TWA	Respiratory sensitizer
	CAL PEL	PEL	0.034 mg/m ³ 0.005 ppm

Exposure controls

Engineering controls: Use local exhaust ventilation with a minimum capture velocity of 100 ft/min. (0.5 m/sec.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Hygiene measures: Keep container closed when not in use. Shower or bathe at the end of working.

Protective measures: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Individual protection measures

Eye/face protection: Tightly fitting safety goggles Eye protection worn must be compatible with respiratory protection system employed.

Skin protection

Hand protection: Chemical-resistant gloves should be worn whenever this material is handled. The glove(s) listed below may provide protection against permeation.

(Gloves of other chemically resistant materials may not provide adequate protection): 4H Glove (Trademark of Safety 4 A/S of Denmark) butyl-rubber Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Before removing gloves clean them with soap and water.

NOTE: Material is a possible skin sensitizer.

Other protection: Avoid all skin contact. Selection of specific personal protective equipment such as long sleeves, safety glasses with side shields, face shield, safety shoes, boots, apron, or full body suit will depend on the task.

Respiratory protection: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in Exposure Limit Information. Above the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode, OR full-facepiece, airline respirator in the pressure demand mode with emergency escape provision.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	liquid clear
Color	No data available
Odor	mild sweet
Odor Threshold	No data available
pH	Not Applicable
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	No data available
Flash point	closed cup > 93.00 °C (> 199.40 °F) <i>SETAFLASH CLOSED CUP</i>
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	Not Applicable
Upper explosion limit	Not Applicable
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	No data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

Molecular weight No data available
Volatile Organic Compounds 2 g/L

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

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: No data available

Possibility of hazardous reactions: Stable under recommended storage conditions. However, keep away from moisture, heat or flame.

Conditions to avoid: None known.

Incompatible materials: Avoid contact with the following: Water Strong acids Strong bases Strong Oxidizers

Hazardous decomposition products: Thermal decomposition may yield the following: isocyanate monomers Hydrogen cyanide (hydrocyanic acid)

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Product test data not available. Refer to component data.

Acute dermal toxicity

Product test data not available. Refer to component data.

Acute inhalation toxicity

Product test data not available. Refer to component data.

Skin corrosion/irritation

Product test data not available. Refer to component data.

Serious eye damage/eye irritation

Product test data not available. Refer to component data.

Sensitization

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Product test data not available. Refer to component data.

Carcinogenicity

Product test data not available. Refer to component data.

Teratogenicity

Product test data not available. Refer to component data.

Reproductive toxicity

Product test data not available. Refer to component data.

Mutagenicity

Product test data not available. Refer to component data.

Aspiration Hazard

Product test data not available. Refer to component data.

Additional information

No toxicity data are available for this material.

COMPONENTS INFLUENCING TOXICOLOGY:

1,6-diisocyanatohexane, homopolymer

Acute oral toxicity

LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity

LD50, Rabbit, male and female, > 2,000 mg/kg

Acute inhalation toxicity

LC50, Rat, male, 4 Hour, dust/mist, 0.543 mg/l

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.
Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause eye irritation.

Sensitization

Skin contact may cause an allergic skin reaction.
Hexamethylene diisocyanate is a potent skin sensitizer. Severe skin rash/allergic skin reactions have been noted in people exposed to aerosols/vapors of heated material.

No signs of respiratory sensitization have been reported.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Decreased lung function has been associated with overexposure to isocyanates.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant information found.

Reproductive toxicity

No relevant information found.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

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

Aliphatic polyisocyanates

Acute oral toxicity

Single dose oral LD50 has not been determined.

Acute dermal toxicity

The dermal LD50 has not been determined.

Acute inhalation toxicity

The LC50 has not been determined.

Hexamethylene diisocyanate

Acute oral toxicity

LD50, Rat, 710 mg/kg

Acute dermal toxicity

LD50, Rat, > 7,000 mg/kg

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, 0.124 mg/l

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Vapor may cause skin irritation.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

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

Vapor may cause lacrimation (tears).

Sensitization

Has caused allergic skin reactions in humans.

Hexamethylene diisocyanate is a potent skin sensitizer. Severe skin rash/allergic skin reactions have been noted in people exposed to aerosols/vapors of heated material.

May cause allergic respiratory reaction.

Reexposure to extremely low isocyanate concentrations may cause allergic respiratory reactions in individuals already sensitized.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs.

Excessive exposure may cause lung injury.

Excessive exposure may produce organophosphate type cholinesterase inhibition.

In animals, effects have been reported on the following organs:

Gastrointestinal tract.

Carcinogenicity

Did not cause cancer in laboratory animals.

Teratogenicity

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

General Information

There is no data available for this product.

Toxicity**1,6-diisocyanatohexane, homopolymer****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).

NOEC mortality, Danio rerio (zebra fish), static test, 96 Hour, > 100 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

NOEC, Daphnia magna, Static, 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EC50, alga Scenedesmus sp., static test, 72 Hour, Biomass, > 1,000 mg/l

Toxicity to bacteria

EC50, activated sludge, Respiration inhibition, 3 Hour, > 1,000 mg/l, OECD 209 Test

Aliphatic polyisocyanates

Acute toxicity to fish

No relevant data found.

Hexamethylene diisocyanate

Acute toxicity to fish

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species.

Not expected to be acutely toxic to aquatic organisms.

LC0, Danio rerio (zebra fish), static test, 96 Hour, >= 82.8 mg/l

Acute toxicity to aquatic invertebrates

EC0, Daphnia magna (Water flea), Static, 48 Hour, >= 89.1 mg/l

Acute toxicity to algae/aquatic plants

No toxicity up to the level of maximum water solubility.

ErC50, Desmodesmus subspicatus (green algae), Static, 72 Hour, Growth rate inhibition, > 77.4 mg/l

Persistence and degradability

1,6-diisocyanatohexane, homopolymer

Biodegradability: 10-day Window: Fail

Biodegradation: 0 %

Exposure time: 28 d

Aliphatic polyisocyanates

Biodegradability: No relevant data found.

Hexamethylene diisocyanate

Biodegradability: In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable.

10-day Window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OECD Test Guideline 302C or Equivalent

10-day Window: Fail

Biodegradation: 42 %

Exposure time: 28 d

Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 2.38 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 1.345 d

Method: Estimated.

Bioaccumulative potential

1,6-diisocyanatohexane, homopolymer

Bioaccumulation: No relevant data found.

Aliphatic polyisocyanates

Bioaccumulation: No relevant data found.

Hexamethylene diisocyanate

Bioaccumulation: Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Bioconcentration factor (BCF): 58 Estimated.

Mobility in soil

1,6-diisocyanatohexane, homopolymer

No relevant data found.

Aliphatic polyisocyanates

No relevant data found.

Hexamethylene diisocyanate

In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations. Waste water from subsequent processing should be given appropriate treatment in line with local regulations. (See 40 CFR 268)

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

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

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.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is considered hazardous under 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
 Fire Hazard

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

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

Pennsylvania

Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

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.

16. OTHER INFORMATION

Hazard Rating System

HMIS

Health	Flammability	Physical Hazard
2*	1	1

* = Chronic Effects (See Hazards Identification)

Revision

Identification Number: 101109481 / 1001 / Issue Date: 07/11/2016 / Version: 5.0
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)
CAL PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Dow IHG	Dow Industrial Hygiene Guideline
DSEN, RSEN	Skin and respiratory sensitizer
PEL	Permissible exposure limit
STEL	Short term exposure limit
TLV-C	Ceiling Limit Value
TWA	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.