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Effective Date: 4/27/06

Material Safety Data Sheet

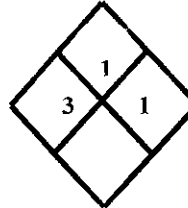
MSDS No: 5790

1. PRODUCT IDENTIFICATION

Trade Name: DION® 31100-00

Chemical Family: Aromatic Isocyanate

Intended Use: Molding Resin



NFPA RATING

Health:	3*
Flammability:	1
Reactivity:	1
Personal Protection:	

HMIS RATING

2. COMPOSITION / INFORMATION ON INGREDIENTS

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	101-68-8	4,4'-Methylenediphenyl Diisocyanate Common Name: Diphenylmethane Diisocyanate (MDI) Concentration: 49.00 wt%	0.005 ppm	NE	0.02 ppm	NE	NE	NR	NR	NR
	Proprietary	Polymeric Diphenylmethane Diisocyanate (MDI) Concentration: 51.00 wt%	NE	NE	NE	NE	NE	NR	NR	NR

NE = Not Established NR = Not Reviewed * = OSHA Hazardous Ingredient

Reference Notes: Refer to Section 8, Subheading "Exposure Guidelines", for additional information concerning exposure limits.

3. HAZARDS IDENTIFICATION

Emergency Overview: Appearance: Light Yellow Liquid Musty Odor.
 Vapors may irritate eyes, nose, throat, and skin.
 Inhalation may cause an allergic respiratory reaction.
 Contact may cause skin sensitization, an allergic reaction which becomes evident on re-exposure to this material.

Route(s) of Entry: Inhalation, skin and eye contact.

Acute Exposure: INHALATION: Harmful if inhaled. Inhalation may cause asthma-like symptoms, including coughing, wheezing, tightness of chest, shortness of breath, headache and reduced lung function. Persons with preexisting, non-specific bronchial hyperreactivity can respond to concentrations below the Threshold Limit Value (TLV) with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasms and pulmonary edema (fluid in the lungs). These effects are usually reversible. Chemical hypersensitivity pneumonitis, with flu-like symptoms (i.e. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.

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SKIN: Contact causes skin irritation. Contact may cause skin sensitization, an allergic reaction which becomes evident on re-exposure to this material.

EYES: Harmful to eyes. Direct contact with this material causes eye irritation.

INGESTION: Effects from exposure through ingestion may include gastrointestinal disturbances, pain and discomfort. Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful.

Chronic Exposure: As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized, an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanate has also been reported to cause lung damage, including decrease in lung function, which may be permanent.

Carcinogenicity: This material does not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the Occupational Safety and Health Administration (OSHA) as a carcinogen.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with large quantities of clean water for at least 15 minutes. Get immediate medical attention.

Skin Contact: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse. Tincture of green soap and water is also effective in removing isocyanates.

Ingestion: DO NOT INDUCE VOMITING. **ASPIRATION HAZARD:** this material may enter the lungs during vomiting. Immediately give the victim one or two glasses of water or milk to drink. Never give anything by mouth to an unconscious person. GET IMMEDIATE MEDICAL ATTENTION.

Inhalation: Remove victim to fresh air. Keep warm and quiet. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. GET IMMEDIATE MEDICAL ATTENTION.

Note to Physician: Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

5. FIRE FIGHTING MEASURES

Flash Point:	427° F (219 ° C)
Flash Point Method Used:	COC
Flammable Limits in Air (Lower):	Not available
Flammable Limits in Air (Upper):	Not available
Autoignition:	464° F (240 ° C) 4,4'-Diphenylmethane Diisocyanate

General Hazards: Containers of this material may build up pressure if exposed to heat (fire). See information in Fire Fighting Instructions (below) in this section.

Fire Fighting Extinguishing Media: Use alcohol foam, dry chemical, carbon dioxide or any Class B fire extinguishing agent. Water may be unsuitable in extinguishing a fire with this material. However, water may be used to cool and prevent the rupture of containers that are exposed to the heat of a fire.

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Fire Fighting Equipment: Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use.

Fire Fighting Instructions: Evacuate all persons from the fire area to an explosion-protected location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. If water is used for fire fighting, use a generous amount. The reaction between this material and water may be vigorous. Excess water limits the hazard of this reaction. Containers of this material may build up pressure if exposed to heat (fire). Use water spray to cool fire-exposed containers.

Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat.

Hazardous Combustion Products: Combustion may produce isocyanate vapors. Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases.

6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Clean-up should only be performed by trained personnel. Persons not wearing protective equipment (see Section 8) should be excluded from the area of the spill until clean-up has been completed. Immediately notify authorities of any reportable spill as may be required pursuant to regulations. See Section 15 for applicable CERCLA reportable quantities. Prevent spilled material from 1) contaminating soil, 2) entering sanitary sewers, storm sewers, and drainage systems, and 3) entering bodies of water or ditches that lead to waterways. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Neutralize small spills with a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Do not tighten bungs.

7. HANDLING AND STORAGE

Signal Word: WARNING

Handling Information: Avoid inhalation and contact with eyes, skin, and clothing. Wash hands thoroughly after handling and before eating or drinking. Remove and wash contaminated clothing before reuse. Use with adequate ventilation. An eyewash station and a safety shower should be readily accessible to workers wherever this material is stored or used.

Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioner or properly disposed.

Storage Information: Keep container closed when not in use. Store in a cool well ventilated area. Keep contents away from moisture. Due to reaction with water, producing carbon dioxide gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Copper or copper containing alloys should be avoided as containers. Do not reseal contaminated containers. Reseal containers only after placing under a nitrogen blanket. Store at temperatures below 100° F (38° C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines: The Occupational Safety and Health Administration (OSHA), has established for 4,4'-Diphenylmethane Diisocyanate (MDI), a Permissible Exposure Limit (PEL) of 0.02 ppm ceiling, not to be exceeded at any time. The American Conference of Governmental Industrial Hygienists (ACGIH) have established, for 4,4'-Diphenylmethane Diisocyanate, a Threshold Limit Value (TLV) of 0.005 ppm Time Weighted Average (TWA) for an 8-hour workday and a 40-hour work week.

Engineering Controls: Local ventilation may be required during certain operations to maintain concentrations below recommended exposure limits. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it.

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Eye Protection: Wear 1) safety glasses with side shields and a faceshield or 2) goggles and a faceshield. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

Skin Protection: Wear chemical resistant gloves such as butyl rubber or nitrile rubber. If splashing is likely, wear impervious clothing and boots to prevent repeated or prolonged skin contact. Consult your supplier of personal protective equipment for additional instructions on proper usage.

Respiratory Protection: A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be necessary under certain circumstances where airborne concentrations are expected to exceed exposure limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

When the product is sprayed or heated without adequate ventilation, an approved NIOSH/MSHA full face, positive pressure air-supplied respirator should be utilized.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Light yellow
Odor:	Musty Odor
Odor Threshold:	400 ppb (4,4'-Diphenylmethane Diisocyanate)
Physical State:	Liquid
Solubility in Water:	Reacts With Water
Vapor Pressure:	< 0.0001 (mm Hg) at 25°C (77 °F)
Specific Gravity:	1.19 (Water = 1) at 25°C (77 °F)
Boiling Point:	Not Applicable
Melting Point:	Not available
Evaporation Rate:	Not available
Vapor Density:	8.5 (AIR=1)
% Volatile:	Negligible
pH:	Not applicable

10. STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and storage conditions.

Incompatibility: Avoid contact with water, amines, and alcohols.

Hazardous Decomposition Products: Thermal decomposition may form: Isocyanates Nitrogen oxides Thermal decomposition may produce various hydrocarbons and irritating, acrid vapors.

Hazardous Polymerization: May occur. Contact with moisture, other materials which react with isocyanates, or temperatures above 400 F (204 C), may cause polymerization.

Conditions to Avoid: Contact with water. Storage temperatures above 100°F (38°C). Freezing temperatures (less than 32°F or 0°C).

11. TOXICOLOGICAL INFORMATION

Acute Eye Toxicity: Polymeric MDI may cause slight to moderate eye irritation.

Acute Skin Toxicity: Polymeric MDI: dermal LD50 (rabbit), > 5010 but less than 7,940 mg / kg.

Acute Inhalation Toxicity: Polymeric MDI: inhalation LC50 (rat), 370 - 490 mg/m³ /4 hrs. The LC50 (rat) for monomeric MDI was estimated to be 172 - 187 mg/m³.

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Acute Oral Toxicity: Polymeric MDI: oral LD50 (rat) > 5,000 mg / kg.

Subchronic: A study was conducted where groups of rats were exposed for 6 hours per day, 5 days per week, for a lifetime to atmospheres of respirable polymeric MDI aerosol either at concentrations of 0, 0.2, 1.0 and 6.0 mg/m³. No adverse effects were observed at 0.2 mg/m³ concentrations. At the 1 mg/m³ concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6.0 mg/m³) was there an increased incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

There are reports that excessive chronic exposure to diisocyanates may result in permanent decrease in lung function.

Chronic/Carcinogenicity: The International Agency for Research on Cancer (IARC) has classified polymeric MDI in Group 3, not classifiable as to its carcinogenicity to humans.

Sensitization: MDI has been shown to produce dermal sensitization in laboratory animals. Evidence of respiratory sensitization has also been observed in guinea pigs. In addition, there is some evidence suggestive of cross-sensitization between different types of diisocyanates.

Teratology: No birth defects were seen in two independent animal (rat) studies conducted with polymeric MDI. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations well in excess of the defined occupational limits.

Mutagenicity: Tests on MDI have given both positive (Salmonella microsome test with metabolic activation; cell transformation assay) as well as negative (mouse lymphoma specific locus mutation test with or without metabolic activation) results when tested "in vitro." However, MDI was negative in an "in vivo" (mouse micronucleus) assay.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Polymeric MDI and monomeric MDI: EC50 (Daphnia magna) > 1,000 mg /L / 24 hrs.; LC50 (Zebra Fish) > 1,000 mg / L.

Environmental Fate: Polymeric MDI is immiscible with water, but will react with water to produce inert and non-biodegradable solids.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Not a RCRA hazardous waste. Disposal of this material is not regulated under RCRA. Consult federal, state and local regulations to ensure that this material and its containers, if discarded, is disposed of in compliance with all regulatory requirements.

EMPTY DRUMS: "Empty containers", as defined under 40 CFR 261.7 or other applicable state or provincial regulations or transportation regulations, are not classified as hazardous wastes.

RCRA Hazard Class: NOT A RCRA HAZARDOUS WASTE: When discarded in its purchased form, this material would not be regulated as a RCRA Hazardous waste under 40 CFR 261.

14. TRANSPORT INFORMATION

DOT / IATA / IMDG / TDG: Non Bulk
Proper Shipping Name:

NOT REGULATED

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DOT: Bulk

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
LIQUID, N.O.S.

Technical Shipping Name (If n.o.s.): METHYLENE DIPHENYL DIISOCYANATE

Hazard Class: 9

ID Number: UN3082

Packing Group: III

ERG Number: 171

IMDG / TDG Bulk

Proper Shipping Name: NOT REGULATED

Additional Information: US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities of specific components.

15. REGULATORY INFORMATION

Clean Air Act -Hazardous Air Pollutants (HAP): Methylene Diphenyl Diisocyanate (101-68-8) is listed under Section 112 as a Hazardous Air Pollutant (HAP).

Occupational Safety and Health Act (OSHA): This material is classified as a hazardous chemical under the criteria of the US Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III: Section 304 - CERCLA: Methylene diphenyl diisocyanate (CAS# 101-68-8): Reportable Quantity = 5000 lbs.

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS): This material is classified as an IMMEDIATE HEALTH HAZARD, DELAYED HEALTH HAZARD, and REACTIVITY HAZARD under the US Superfund Amendment and Reauthorization Act (Section 311/312).

SARA Title III: Section 313 Toxic Chemical List (TCL): Diphenylmethane Diisocyanate (101-68-8)

TSCA Section 8(b) - Inventory Status: All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.

TSCA Section 12(b) - Export Notification: This material does not contain any components that are subject to the US Toxic Substances Control Act (TSCA) Section 12(b) Export Notification requirements.

Australian Inventory Status: This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances.

Canadian Inventory Status: All components of this material are listed on the Canadian Domestic Substances List (DSL).

Canadian WHMIS: This material is classified by the Canadian Workplace Hazardous Material Information System as: D1A (materials causing immediate and serious toxic effects, very toxic material) D2A (materials causing other toxic effects, very toxic material) D2B (materials causing other toxic effects, toxic material)

European Inventory Status (EINECS): All components are either listed or are exempt from being listed, on the EINECS chemical inventory.

Korean Inventory Status: This product contains only chemicals which are currently listed on the Korean Chemical Substances List.

Additional Canadian Regulatory Information: The following chemicals are listed on the WHMIS Ingredient Disclosure List: Diphenylmethane Diisocyanate (CAS# 101-68-8)

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16. OTHER INFORMATION

MSDS No:	5790
Reason Issued:	General Update for French Version
Prepared By:	Product Safety and Compliance Department
Approved Date:	04/27/06
Supersedes Date:	01/07/04

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