



International Polyurethane Systems (IPS)

Material Safety Data Sheet Fast-Set Binder D1010/2

1. PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER: Dinoflex Group LP
P.O. Box 3309, 5590 - 46th Ave. SE
Salmon Arm, B.C.
V1E 4S1 Canada
(250) 832- 5142

EMERGENCY CONTACT NUMBER: Canutec
(613) 996-6666

PRODUCT NAME: Binder D1010/2

MATERIAL CODE: 9101002

CHEMICAL FAMILY: Aromatic Isocyanate Prepolymer

PRODUCT USE: Binder

FORMULA: Not Applicable

2. INFORMATION ON HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	CAS #	% Range	LD/50	LC/50
4,4' Diphenylmethane Diisocyanate (MDI)	101-68-8	~ 50 - 65	> 10000 mg/kg oral (rat)	370 - 490 mg/m ³ aerosol for 4 hours (rat)
Polyether Polyol	25214-63-5	~ 15 - 20	No Data	No Data
Polypropylene Glycol	Not Listed	~ 15 - 20	No Data	No Data

3. HAZARDS IDENTIFICATION

HAZARD SUMMARY (OSHA) :	Irritating to eyes, respiratory system and skin. Inhalation levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should not be exposed to any un-reacted MDI.
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ROUTES OF ENTRY: Ingestion, skin contact, eye contact, inhalation. Although MDI is low in volatility, an inhalation hazard can exist from MDI aerosols or vapors formed during heating, foaming or spraying.

MEDICAL CONDITIONS AGGRAVATED: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperactivity), skin allergies, eczema.

4. FIRST AID MEASURES

INHALATION: Remove individual to fresh air. Administer oxygen or artificial respiration as needed by trained personnel. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult a physician should this occur

SKIN CONTACT: If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use. Wash skin thoroughly with soap and water. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

EYES: Immediately flush eyes with plenty of water, preferably luke warm, for at least 15 minutes while holding eyelids apart. Call a physician immediately.

INGESTION: Call a physician immediately. DO NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person.

SPECIAL NOTES TO PHYSICIAN

INHALATION: This compound is known as a pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a sensitization reaction should be removed from exposure to any isocyanate.

SKIN CONTACT: This compound is known as a skin sensitizer. Treat symptomatically as for dermatitis or thermal burn.

EYES: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision.

INGESTION: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound.

5. FIRE FIGHTING MEASURES

FLAMMABILITY SUMMARY:

This material supports combustion. During a fire, MDI vapors and irritating toxic gases may be generated by thermal decomposition or combustion.

FLASH POINT: > 110°C (230°F)

AUTOIGNITION TEMPERATURE:	No Data
UPPER FLAMMABLE LIMIT, % IN AIR:	No Data
LOWER FLAMMABLE LIMIT, % IN AIR:	No Data
EXTINGUISHING MEDIA:	Use foam, carbon dioxide, dry chemical or water spray when fighting fires. If water is used, very large quantities are required. Contain run off water with temporary barriers.
FIRE FIGHTING INSTRUCTIONS:	In case of fire, use normal fire fighting equipment including a NIOSH approved self-contained breathing apparatus (SCBA). Use water to cool fire-exposed containers to minimize the risk of rupture. Do not spray fire directly. A solid stream of water directed into the hot burning liquid could cause frothing. During a fire, MDI vapors and irritating toxic gases may be generated by thermal decomposition or combustion.
COMBUSTION PRODUCTS:	Nitrogen oxides, isocyanates, hydrogen cyanide, carbon monoxide, carbon dioxide
SENSITIVITY TO IMPACT:	Not sensitive to mechanical impact.
SENSITIVITY TO STATIC CHARGE:	Not sensitive to static charge.

6. ACCIDENTAL RELEASE MEASURES

SPILL/LEAK PROCEDURES:	Stop source of spill as soon as possible and notify appropriate personnel. Utilize emergency response personal protection equipment prior to the start of any response. Evacuate all non-essential personnel. Cover spill with absorbent material, such as sand, sawdust or sweeping compound. Shovel into unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO ₂ escape. Clean-up floor area with decontamination solution, letting stand for at least 15 minutes.
PERSONAL PROTECTION:	Additional protective clothing must be worn to prevent contact with this chemical. Items include but are not limited to boots, impervious gloves, hard hat, splash-proof goggles, chemically impermeable suit, and self-contained breathing apparatus.

7. HANDLING AND STORAGE

HANDLING PROCEDURES:	Do not reseal container if contamination is suspected. Avoid skin and eye contact. Do not breathe vapors or aerosols if generated. Warning signs (irritation of the eyes, nose or throat, or odor) are not adequate to prevent chronic exposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a
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	relatively high concentration or upon repeated inhalation exposures to lower concentrations. Exposure to vapors of heated MDI can be very dangerous.
STORAGE REQUIREMENTS:	Store in a cool, dry and well ventilated place. Isolate from incompatible materials. Store in a tightly closed container. Avoid contact with water, or moist air.
SHELF LIFE:	Six months
STORAGE TEMPERATURE:	Store at 18 - 30 °C for quality reasons
SPECIAL SENSITIVITY:	If container is exposed to high heat, 204°C (400°F) it can be pressurized and possibly rupture. MDI reacts with water to form CO ₂ gas. This gas can cause sealed containers to expand and possibly rupture.

8. RECOMMENDED PERSONAL PROTECTION

RESPIRATORY PROTECTION:	<p>Due to the poor warning properties of MDI, proper fit and timely replacement of filter elements must be ensured. Observe WHMIS regulations for respirator use.</p> <p>NIOSH recommends for MDI concentrations in air:</p> <ul style="list-style-type: none"> - To 0.5 mg/m³: SAR - To 1.25 mg/m³: SAR operated in continuous-flow mode. - To 2.5 mg/m³: Full facepiece SCBA or SAR. - To 75 mg/m³: Positive pressure, full-facepiece SCBA
SKIN PROTECTION:	Chemically resistant gloves (butyl rubber, nitrile rubber, or polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area with appropriate clothing. If skin creams are to be used, keep the area covered by the cream to a minimum. Safety showers should be accessible to the work area.
EYE PROTECTION:	Liquid chemical goggles or full face shield. Contact lenses should not be worn. Eyewash stations should be accessible to the work area.
VENTILATION REQUIREMENTS:	Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated, or spray applied. For spray applications, an air-supplied respirator must be worn. Standard reference sources regarding industrial ventilation should be consulted for guidance about adequate ventilation.
ADDITIONAL REQUIREMENTS:	An eye wash and safety shower must be provided in immediate work area. MDI exposure levels must be monitored by accepted monitoring techniques to ensure that the TLV is not exceeded. See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.
MEDICAL SURVEILLANCE:	Medical surveillance of all employees who handle or come in contact with MDI is recommended. These should include pre-employment and periodic medical examinations with respiratory function tests (FEV ₁ , FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization

should be excluded from working with MDI. Once a person is diagnosed as sensitized to MDI, no further exposure can be permitted.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Clear to Amber
ODOR:	Slight
ODOR THRESHOLD:	No Data
SPECIFIC GRAVITY @ 22°C:	1.10 - 1.20
VISCOSITY @ 22°C:	4500 - 5500 mPa s
VAPOR DENSITY @ 22°C:	No Data
VAPOR PRESSURE:	No Data
EVAPORATION RATE:	No Data
BOILING POINT:	No Data
FREEZING POINT:	No Data
PH:	No Data
OIL/WATER DISTRIBUTION:	No Data
SOLUBILITY IN WATER:	Not Soluble; Reacts with water to produce CO ₂

10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY SUMMARY:	Stable under normal conditions. Not sensitive to mechanical shock or to static discharge.
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HAZARDOUS POLYMERIZATION:	May occur if in contact with moisture or other materials which react with isocyanates. May occur at temperatures over 204°C (400°F).
CONDITIONS TO AVOID:	Contact with water. High temperatures.
CHEMICAL INCOMPATIBILITY:	Water, amines, strong bases, acids and alcohols.
DECOMPOSITION PRODUCTS:	Carbon monoxide, oxides of nitrogen, traces of HCN, MDI vapors or aerosols.
DECOMPOSITION TEMPERATURE:	No Data

11. TOXICOLOGICAL INFORMATION

REPRODUCTIVE TOXICITY:	Not known or reported to cause reproductive or developmental toxicity.
TERATOGENICITY:	Not known or reported to be teratogenic.
MUTAGENICITY:	Not known or reported to be mutagenic.
CARCINOGENICITY:	This chemical is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or ACGIH.
EMBRYOTOXICITY:	Not known or reported to be embryotoxic.

IMMEDIATE (ACUTE) HEALTH EFFECTS

INHALATION:	MDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function. Persons with a pre-existing, non-specific bronchial hyperactivity can respond to concentrations well below the TLV with similar symptoms or with an asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonia, with flu-like symptoms (e.g. fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure.
SKIN CONTACT:	Diisocyanates react with skin protein and moisture and can cause irritation which may include reddening, swelling, scaling, or blistering. Cured material is difficult to remove.
EYES:	Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. Damage is usually reversible.
INGESTION:	Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

PROLONGED (CHRONIC) HEALTH EFFECTS

INHALATION:	As a result of previous repeated overexposures or a single large dose, certain individuals develop diisocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to diisocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma 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 some cases for several years. Overexposure to diisocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.
SKIN CONTACT:	Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and in some cases, skin sensitization. Individuals who have developed a skin

sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

EYES: There are no known or reported effects from eye contact except for effects similar to those experienced from single exposure. The acute corrosiveness of this product makes chronic eye contact of significant amounts unlikely.

INGESTION: There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure. The acute corrosiveness of this product makes chronic ingestion of significant amounts unlikely.

PRODUCT ANIMAL TOXICOLOGY

ORAL LD50 VALUE: 5000 mg/Kg

DERMAL LD50 VALUE: 5000 mg/Kg

INHALATION LC50 VALUE: No Data

12. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

WASTE CLASSIFICATION: If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261.

DISPOSAL METHODS: As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations. Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

13. TRANSPORT INFORMATION

LAND (DOT): Not Regulated

AIR (IATA/ICAO): Not Regulated

WATER (IMO): Not Regulated

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG): Not Regulated

CANADAIAN DOMESTIC SUBSTANCES LIST (CEPA/DSL): Substance is on the list

14. REGULATORY INFORMATION

WHMIS CLASSIFICATION: D-1A; D-2A & D-2B : Inhalation may cause and allergic respiratory reaction. Skin contact may cause an allergic skin reaction.

15. OTHER INFORMATION

MSDS PREPERATION DATE: July, 1995
PREPARED BY: Don Campagnolo
MAJOR REFERENCES: ARCH Chemical, Albemarle, Huntsman Chemical.
MSDS REVISION DATE: December, 2010
REVISED BY: Marci Hyatt
SECTION(S) REVISED: Format

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