

# SAFETY DATA SHEET

Part No.: X-1B.55

DATE: April 28, 2014  
SUPERCEDES: March 11, 2014

PRODUCT NAME: X-1 FlexGrip RESIN

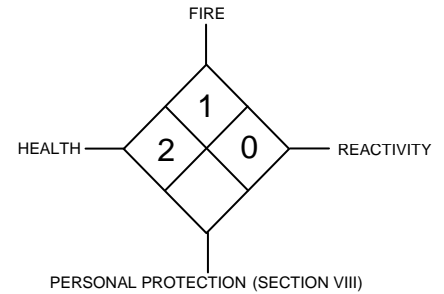
## SECTION 1 - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Pinnacle West Enterprises Inc.

ADDRESS: 31897 Mercantile Way, Abbotsford, BC, V2T 4C3

INFORMATION PHONE: 604-854-5968

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300



HMIS HAZARD RATING  
LEAST---0 SLIGHT--- 1  
MODERATE --- 2 HIGH ----- 3  
EXTREME ---- 4

## SECTION 2 - COMPOSITION & INGREDIENTS

Proprietary Formulation

## SECTION 3 - Hazards Identification

Wt%	Ingredients	CAS #	OSHA PEL	ACGIH TLV
40 -60	Glycol	111-46-6	N/E	N/E
30 - 40	Glycerol/EO/PO polymer	9082-00-2	N/E	N/E
5 -20	Glyceryl poly(oxypropylene) diamine	9046-10-0	N/E	N/E
5 - 20	Glyceryl poly(oxypropylene) triamine	64852-22-8	N/E	N/E

## SECTION 4 - FIRST AID MEASURES

**Skin Contact:** Frequent and prolonged contact can cause irritation. Skin sensitization and irritation may develop after repeated and/or prolonged contact with human skin.

**Skin Absorption:** Systematically toxic concentrations of this product will probably not be absorbed through human skin.

**Skin First Aid:** Wash material off of the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention. Wash contaminated clothing and decontaminate footwear before reuse.

**Eye Contact:** Can induce irritation or chemical burns on contact with eyes.

**Eye First Aid:** Immediately flush eyes with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and treated by medical personnel.

**Ingestion:** Swallowing small amounts of this material is not likely to cause harmful effects. Swallowing large amounts may be harmful.

**Ingestion First Aid:** Give 1 or 2 glasses of water and induce vomiting. Call a physician immediately. (Never give anything by mouth to an unconscious person).

**Inhalation:** Vapors can irritate eyes, nose and respiratory passages. Overexposure may induce headache or dizziness. Severe overexposure to this material could cause stomach or intestinal upset, chronic cough, dizziness, or weakness.

**Inhalation First Aid:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

**Carcinogenicity:** NTP - No IARC Monographs - No OSHA Regulated - No

**Health Hazards: Acute:** Exposure may cause skin and eye irritation, respiratory tract irritation. Chemical burns may result due to overexposure. Affects of exposure may be delayed. **Chronic:** Repeated and prolonged exposure at low levels may result in adverse skin and eye effects, liver and kidney disorders.

## SECTION 5 - FIRE FIGHTING MEASURES

**Flash Point:** > 302° F (150° C) Method: PMCC

**Flammable Limits in Air by Volume:** (Based on Diglycol) Lower: N/E Upper: N/E

**Extinguishing Media:** Dry chemical, alcohol foam, carbon dioxide.

**Special Fire Fighting Protective Equipment:** Wear NIOSH approved self contained breathing apparatus in positive pressure mode with full face piece. Boots, gloves (neoprene), goggles & full protective clothing are also required.

**Unusual Fire and Explosion Hazards:** Closed containers may rupture due to very high temperatures or induced pressure.

## PRODUCT NAME: X-1 FlexGrip RESIN

## SECTION 6 – SPILLAGE, ACCIDENTAL RELEASE MEASURES

**Steps To Be Taken In Case Material is Released Or Spilled:** Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work area. Residues from spill cleanup may continue to be regulated under provisions of RCRA and require storage and disposal as hazardous waste. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

**Disposal Method:** Spill cleanup residues may still be subject to RCRA storage and disposal requirements. Dispose of in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

## SECTION 7 – HANDLING AND STORAGE

**Precautions To Be Taken In Handling & Storing:** Keep in cool, dry, ventilated storage area, in closed container and out of direct sunlight. Keep liquid away from heat, sparks and flame, store in container above ground and surrounded by dikes to contain spills or leaks. Excessive heat or pressure may ignite or detonate even liquid product in the absence of sparks or open flames. Keep containers closed when not in use. Containers, even those that have been emptied, may contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not pressurize to empty them.

**Storage Precautions:** Keep away from heat and sparks.

## SECTION 8 – EXPOSURE CONTROLS AND PROTECTION INFORMATION

**Ventilation:** Good general ventilation should be sufficient to control airborne levels.

**Respiratory Protection:** When spraying, use a NIOSH approved supplied air respirator as required to prevent overexposure. In accordance with 29 CFR 1910.134, use either an atmosphere supplying respirator or and air purifying respirator for organic vapors.

**Protective Clothing:** Gloves determined to be impervious under the options of use such as nitrile gloves should be worn always when working with this product. Depending on conditions of use, additional protection may be reassured such as apron, arm covers, or full body suit. Wash contaminated clothing before wearing. Protective clothing should be selected and used in accordance with “Guidelines for the Selection of Chemical Protective Clothing” published by ACGIH.

**Eye Protection:** Chemical tight goggles

**Other Protective Equipment:** Unhindered access to safety shower and eye wash stations. As a general hygiene practice, wash hands and face after use. Showers and cleaning of clothes are recommended. Follow all label instructions. Educate and train employees in safe use of product.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Black liquid, slight odor.

**Solubility in Water:** N/E

**Boiling Point:** > 392° F (> 200° C)

**Specific Gravity (H<sub>2</sub>O = 1):** 1.04

**Vapor Density (Air = 1):** Heavier than air.

**Evaporation Rate:** Slower than ether.

**Coating V.O.C.:** 0 G/L (0 LB/GL)

**V.O.C.s:** None

## SECTION 10 – STABILITY AND REACTIVITY

**Stability:** Stable under normal conditions.

**Conditions to Avoid:** Heat, high temperatures, open flame, sparks and moisture. Contact with incompatible materials in a closed system will cause buildup of pressure.

**Incompatibility:** Isocyanates and strong acids and oxidizers.

**Hazardous Decomposition Products:** Organic vapors and other thermal decomposition products.

**Hazardous Polymerization:** Will not occur.

## SECTION 11 – TOXICOLOGICAL INFORMATION

No Information Available

## SECTION 12 – ECOLOGICAL INFORMATION

No Information Available

**PRODUCT NAME: X-1 FlexGrip RESIN****SECTION 13 – DISPOSAL CONSIDERATIONS**

**Disposal Method:** Spill cleanup residues may still be subject to RCRA storage and disposal requirements. Dispose of in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

**Waste disposal of substance:**

Incinerate in a licensed facility.

Do not discharge substance/product into sewer system.

**Container disposal:**

Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

**SECTION 14 – TRANSPORTATION INFORMATION****Land transport**

USDOT

Not classified as a dangerous good under transport regulations

**Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

**Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

**SECTION 15 – NATIONAL REGULATIONS AND REFERENCES****USA CLASSIFICATION****OSHA Classification**

**Physical:** Not Regulated

**Health:** Skin sensitizer. Irritant.

**Target Organ:** Skin. Central nervous system. Peripheral nervous system. Liver. Urinary tract. Gastrointestinal tract.

**TSCA (Toxic Substance Control Act) Regulations:** All ingredients are on the TSCA Chemical Inventory.

**EPCRA Section 313 (40 CFR 372):** This product does not contain any chemicals subject to reporting requirements. This product does not contain nor is it manufactured with ozone depleting substances.

**Other Regulation/Legislation Which Apply To This Product:** Massachusetts Right-to-Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know.

**CANADIAN CLASSIFICATION**

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS Material Safety Data Sheet) contains all the information required by the CPR.

**Controlled Products Regulations (WHMIS) Classification:** D-2B: Irritant.

**CEPA/Canadian Domestic Substance List (DSL):** The substance(s) in this product is/are on the Canadian Domestic Substances List (CEPA DSL).

**SECTION 16 – DISCLAIMER**

**Disclaimer:** The data set forth in this sheet are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. Pinnacle West Enterprises Inc. makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereof.

**PRODUCT NAME: X-1 FlexGrip Iso**

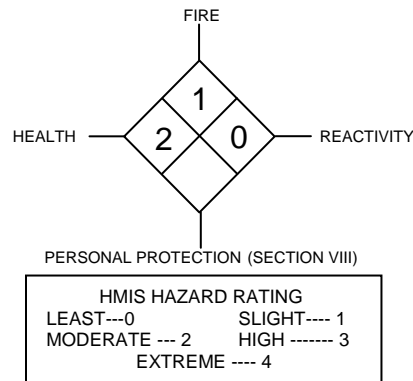
**SECTION 1 – SUBSTANCE/PREPARATION AND COMPANY IDENTIFICATION**

**MANUFACTURER’S NAME:** Pinnacle West Enterprises Inc.

**ADDRESS:** 31897 Mercantile Way, Abbotsford, BC, V2T 4C3

**INFORMATION PHONE:** 604-854-5968

**EMERGENCY CONTACT: (CHEMTREC): 800-424- 9300**



**SECTION 2 – COMPOSITION & INGREDIENTS**

CAS Number	Content (W/W)	Chemical name
101-68-8	45 - 55 %	Diphenylmethane-4,4'-diisocyanate (MDI)
	< 55.0 %	Isocyanate Prepolymer
26447-40-5	< 5.0 %	MDI Mixed Isomers
27554-26-3	<10%	Diisooctyl Phthalate

**Section 313 Supplier Notification**

This product contains the following EPCRA section 313 chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372): Diisocyanate Compounds (Category Code N120)

4,4' - MDI	101-68-8	45-55%	0.005 ppm
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**SECTION 3 – Hazards Identification**

**Emergency overview**

CAUTION: CONTAINS DIPHENYLMETHANE DIISOCYANATE (CAS No. 101-68-8). INHALATION OF MDI MISTS OR VAPORS MAY CAUSE RESPIRATORY IRRITATION, BREATHLESSNESS, CHEST DISCOMFORT AND REDUCED PULMONARY FUNCTION. OVEREXPOSURE WELL ABOVE THE PEL MAY RESULT IN BRONCHITIS, BRONCHIAL SPASMS AND PULMONARY EDEMA. LONG-TERM EXPOSURE TO ISOCYANATES HAS BEEN HAS BEEN REPORTED TO CAUSE LUNG DAMAGE, INCLUDING REDUCED LUNG FUNCTION WHICH MAY BE PERMANENT. ACUTE OR CHRONIC OVEREXPOSURE TO ISOCYANATES MAY CAUSE SENSITIZATION IN SOME INDIVIDUALS, RESULTING IN ALLERGIC RESPIRATORY REACTIONS INCLUDING WHEEZING, SHORTNESS OF BREATH AND DIFFICULTY BREATHING.

**Potential health effects**

**Primary routes of exposure**

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

**Acute toxicity:**

*Information on: MDI*

*Inhalation of MDI vapors may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function. Airborne overexposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema.*

*Isocyanates have also been reported to*

*cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed. Gastrointestinal symptoms include nausea, vomiting and abdominal pain.*

**PRODUCT NAME: X-1 FlexGrip Iso**

**SECTION 3 – Hazards Identification Continued**

**Irritation:**

*Information on: Diisocyanates*

*Eye contact with isocyanates may result in conjunctival irritation and mild corneal opacity. Skin contact may result in dermatitis, either irritative or allergic.*

**Repeated dose toxicity:**

*Information on: MDI*

*Results from a lifetime inhalation study in rats indicate that MDI aerosol was carcinogenic at 6 mg/m<sup>3</sup>, the highest dose tested. This is well above the recommended TLV of 5 ppb (0.05 mg/m<sup>3</sup>). Only irritation was noted at the lower concentration of 0.2 and 1 mg/m<sup>3</sup>. No birth defects or teratogenic effects were reported in a teratology study with rats exposed to 1, 4, and 12 mg/m<sup>3</sup>*

*polymeric MDI for 6 hr/day on days 6-15 of gestation. Embryotoxicity and fetotoxicity was reported at the top dose in the presence of maternal toxicity.*

*Information on: Isocyanates*

*As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which 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 isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent.*

*Sensitization may be either temporary or permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapor-only exposure.*

**Medical conditions aggravated by overexposure:**

Medical supervision of all employees who handle or come into contact with isocyanates is recommended. The isocyanate component is a respiratory sensitizer. It may cause allergic reaction leading to asthma-like spasms of the bronchial tubes and difficulty in breathing.

Pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum) are suggested.

Persons with history of respiratory disease or hypersensitivity should not be exposed to this product. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates. Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended. An animal study indicated that MDI may induce respiratory hypersensitivity following dermal exposure.

**SECTION 4 – FIRST AID MEASURES**

**General advice:**

Remove contaminated clothing.

**If inhaled:**

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary.

Immediate medical attention required.

**If on skin:**

Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

**SECTION 4 – FIRST AID MEASURES**

**PRODUCT NAME: X-1 FlexGrip Iso**

**Note to physician**

Antidote: Specific antidotes or neutralizers to isocyanates do not exist.  
Treatment: Treatment should be supportive and based on the judgment of the physician in response to the reaction of the patient.

**SECTION 5 – FIRE FIGHTING MEASURES**

**Flash point:** > 110 °C (230 F) (Pensky Closed Cup)

**Autoignition:** >600°C

**Suitable extinguishing media:** water, dry extinguishing media, carbon dioxide, foam

**Hazards during fire-fighting:** nitrous gases, fumes/smoke, isocyanate, vapour

**Protective equipment for fire-fighting:** Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

**SECTION 6 – SPILLAGE, ACCIDENTAL RELEASE MEASURES**

**Steps To Be Taken In Case Material Is Released Or Spilled:**

**Personal precautions:**

Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

**Environmental precautions:**

Do not discharge into drains/surface waters/groundwater.

**Cleanup:**

Dike spillage.

For small amounts: Absorb isocyanate with suitable absorbent material (see § 40 CFR, sections 260, 264 and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside). Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 8 % concentrated ammonia, 2 % detergent. Add at a 10 to 1 ratio. Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide.

For large amounts: If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal.

For residues: The following measures should be taken for final cleanup: Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.

**SECTION 7 – HANDLING AND STORAGE**

**PRODUCT NAME: X-1 FlexGrip Iso****Handling****General advice:**

Mix thoroughly before use. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing.

**Protection against fire and explosion:** No explosion proofing necessary.

**Storage****General advice:**

Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Formation of CO<sub>2</sub> and build up of pressure possible.

**Storage incompatibility:**

General: Segregate from bases.

**Storage stability:**

Storage temperature: 80 - 95 °F

Protect against moisture.

**SECTION 8 – EXPOSURE CONTROLS AND PROTECTION INFORMATION****Components with workplace control parameters**

Diphenylmethane-4,4'-	OSHA	CLV 0.02 ppm 0.2 mg/m <sup>3</sup> ;
diisocyanate (MDI)	ACGIH	TWA value 0.005 ppm ;

**Advice on system design:**

Provide local exhaust ventilation to maintain recommended P.E.L.

**Personal protective equipment****Respiratory protection:**

For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH certified full face piece pressure demand self-contained breathing apparatus (SCBA) or a full face piece pressure demand supplied-air respirator (SAR) with escape provisions. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NIOSH-certified air-purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place.

**Hand protection:**

Chemical resistant protective gloves, Suitable materials, chloroprene rubber (Neoprene), chlorinated polyethylene, polyvinyl chloride (Pylox), butyl rubber, fluoroelastomer (Viton), nitrile rubber (Buna N)

**Eye Wear****Eye protection:**

Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

**Body protection:**

Suitable materials, saran-coated material

**General safety and hygiene measures:**

Wear protective clothing as necessary to prevent contact. Eye wash fountains and safety showers must be easily accessible. Observe the appropriate PEL value. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or disposed of.

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

**PRODUCT NAME: X-1 FlexGrip Iso**

**Form:** liquid  
**Odor:** aromatic, faint odour  
**Color:** colorless to light yellow  
**PH value:** No data available.  
**Bulk density:** 9.92 lb/USg (25 °C)  
**Viscosity, dynamic:** 180 – 250 cps (25 °C)  
**Miscibility with water:** Reacts with water

**Boiling Point:** 406<sup>0</sup>F.  
**Vapor Density:** 8.5 approx  
**Solubility in Water:** Reacts with water  
**Freezing Point:** 41<sup>0</sup>F

**Specific Gravity (H2O = 1):** 1.19 @ 77<sup>0</sup> F  
**Evaporation Rate:**  
**Coating V.O.C.:** None  
**V.O.C.s:** None

**SECTION 10 – STABILITY AND REACTIVITY**

**Conditions to avoid:** Avoid moisture.

**Substances to avoid:** water, alcohols, strong bases, Substances/products that react with isocyanates.

**Hazardous reactions:** The product is chemically stable. Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalies. Reacts with amines. Risk of exothermic reaction. Risk of violent reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

**Decomposition products:** Hazardous decomposition products: carbon monoxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapours

**Thermal decomposition:** No data available.

**Corrosion to metals:** No corrosive effect on metal.

**Stability:** Store at 70 deg F to 120 deg F.

**SECTION 11 – TOXICOLOGICAL INFORMATION****Acute toxicity****Oral:**

LD50/rat: > 10,000 mg/kg  
Practically nontoxic.

**Inhalation:**

LC50/rat:  
LC50/rat: / 4 h  
LC50/rat: / 4 h  
LC50/rat: 2.240 mg/l / 1 h  
Moderately toxic.

**SECTION 12 – ECOLOGICAL INFORMATION****Environmental toxicity**

**Acute and prolonged toxicity to fish:**



**PRODUCT NAME: X-1 FlexGrip Iso**

static  
zebra fish/LC50 (24 h): > 500 mg/l  
Practically nontoxic.  
**Chronic toxicity to aquatic invertebrates:**  
Daphnia magna EC50 (24 h) > 500 mg/l  
Practically nontoxic.

**SECTION 13 – DISPOSAL CONSIDERATIONS**

**Waste disposal of substance:**  
Incinerate or dispose of in a licensed facility.  
Do not discharge substance/product into sewer system.  
**Container disposal:**  
Steel drums must be emptied and can be sent to a licensed drum re conditioner for reuse, a scrap metal dealer or an approved landfill. Refer to 40 CFR § 261.7 (residues of hazardous waste in empty containers).  
Decontaminate containers prior to disposal. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.  
Decontamination solution: Mixture of 90% water, 8% ammonia and 2% liquid soap. Mix the solution and mist into empty container using hand sprayer. Leave screw caps off to avoid any pressure build from co2 release.

**SECTION 14 – TRANSPORTATION INFORMATION**

<b>Land transport</b> <i>USDOT</i>	Not classified as a dangerous good under transport regulations
<b>Sea transport</b> <i>IMDG</i>	Not classified as a dangerous good under transport regulations
<b>Air transport</b> <i>IATA/ICAO</i>	Not classified as a dangerous good under transport regulations

**SECTION 15 – NATIONAL REGULATIONS AND REFERENCES**

**Federal Regulations**  
**Registration status:**

**PRODUCT NAME: X-1 FlexGrip Iso**

TSCA, US released / listed

**OSHA hazard category:** ACGIH TLV established, Highly toxic - inhalation, OSHA PEL established, Sensitizer, Acute target organ effects reported, Skin and/or eye irritant, Chronic target organ effects reported

<b>CERCLA RQ</b> 5,000 LBS	<b>CAS Number</b> 101-68-8	<b>Chemical name</b> Diphenylmethane-4,4'-diisocyanate (MDI)
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**SARA hazard categories (EPCRA 311/312):** Chronic, Acute

**SARA 313:**

<b>CAS Number</b>	<b>Chemical name</b> Diisocyanates Compound Category
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**State regulations**  
**State RTK**

<b>CAS Number</b> 101-68-8	<b>Chemical name</b> Diphenylmethane-4,4'-diisocyanate (MDI)	<b>State RTK</b> MA, NJ, PA
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**SECTION 16 –DISCLAIMER**

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