

**TOWNSEND ATELIER,LLC**

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Phone: 423-903-1488 Fax: 423-265-0502

MATERIAL SAFETY DATA SHEET: TOWNSEND CASTING RESIN™ “A”**I. Product Identification - “A” Component - Polymeric Isocyanate**

Product Name: Townsend Casting Resin: Two-Component Casting Urethane
Product Code: 200006, 200005, 200004, 200003, 200002
Emergency Contact: 423-903-1488

Chemical Family: Polymeric Isocyanate
Chemical Name: Polymeric Diphenylmethane 4,4 Diisocyanate
Synonyms: MDI, ISO, “A” Component
CAS Number: See Below

II. Hazardous Ingredients*

Components:		Approx. %	
	Current TLV/PEL		
4,4- Diphenylmethane Diisocyanate	Cas# 101-68-8	30 - 50	.02 PPM, ceiling
Modified MDI	Cas# 25686-28-6	30 - 50	Not Listed.
Diisodecyl Phthalate	Cas# 26761-40-0	10 - 40	N.E.

* Ingredients not precisely identified are proprietary or not hazardous. Values are not product specifications.

III. Physical Data

Appearance: Viscous Liquid
Color: Pale Yellow Liquid
Odor: Slightly Aromatic or Musty
Molecular WT: N/A
Melt Point / Freeze Point: Below 60°F.
Boiling Point: Decomposes At 646°F (341°C)
Vapor Pressure: (mm Hg at 20°C: below 0.0001)
Vapor Density (Air = 1): 8.6
Specific Gravity: 1.2
Solubility in Water: Reacts
VOC %: 0

IV. Fire & Explosion Data

Flash Point: 400°F. (204°C.) COC

Flammable Limits In Air By Volume:

Lower: N.E (Nonvolatile Fluid)

Upper: N.E (Nonvolatile Fluid)

Extinguishing Media: Dry chemical extinguishers such as Monoammonium Phosphate, Potassium Sulphate, Potassium Chloride. Additionally, Carbon Dioxide, high expansion (Protenic) chemical foam, water spray for large fires.

Special Fire Fighting Procedure: If water is used, use large amounts as the reaction between hot Isocyanates and water can be vigorous. Use self- contained breathing apparatus and body covering protective clothing.

Unusual Fire and Explosion Hazards: Water contamination will produce Carbon Dioxide. Do not re-seal contaminated containers as pressure buildup may rupture them.

V. Health Hazard Information

Animal Toxicity

- Oral, LD50 (ingestion): >20 G/KG (Rats)
Dermal, LDS50 (skin contact): >15.8 G/KG (Rabbits)
Inhalation, LC50 (4 HR): Approx. 370 MG/L (Dapnea, Limnea Invertebrates and Zebra Fish)
- Eyes: Liquids, aerosols, or vapors are irritating and can cause tearing, reddening, and swelling following contact.
- Skin: Can cause skin irritation, which may include the following: reddening, swelling, rash, scaling, and blistering.
Sensitization to isocyanates may result with prolonged contact.
- Other: No conclusive evidence has been developed to indicate that MDI is carcinogenic, teratogenic, or that it causes reproductive effects in animals and humans.

Human Effects of Overexposure

- Inhalation: May cause respiratory sensitization in susceptible individuals. At room temperature, vapors are minimal due to low vapor pressure. If heated or sprayed as an aerosol, excessive concentrations are attainable that could be hazardous on single exposure. Excessive exposure may cause irritation of the eyes, upper respiratory tract and lungs. Effects may be delayed. Decreased ventilatory capacity has been associated with exposure to similar Isocyanates; it is possible that exposure to MDI may cause impairment of lung function.
- Skin: May cause allergic skin reaction in susceptible individuals. Prolonged or repeated contact may cause skin irritation and may stain the skin.
- Ingestion: This is not considered a common occupation route of exposure, and single dose toxicity is low.
- Threshold Limit Value (ACGIH): TLV is .005 PPM TWA
Permissible Exposure Limit (OSHA): PEL is .02 PPM

VI. Emergency & First Aid Procedures

- Eye contact: Flush with clean, lukewarm water at low pressure for at least 15 minutes, occasionally lifting eyelids. Consult a physician immediately.
- Skin Contact: Remove contaminated clothing. Wash exposed area with warm soapy water thoroughly. Contaminated clothing should be properly laundered before reusing.
- Inhalation: Remove victim from area of exposure to safe area. If not breathing, give mouth to mouth resuscitation. If breathing is difficult, give oxygen. Consult a physician immediately.
- Ingestion: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

Note to Physician: No specific antidote. Supportive care. Treatment based on judgment of physician in response to reaction of the patient. The manifestation of respiratory symptoms, including pulmonary edema, resulting from acute exposure, may be delayed. May cause respiratory sensitization.

Carcinogenicity: Neither MDI nor Polymeric MDI are listed by the NTP, IARC, or regulated by Federal OSHA or Cal OSHA as carcinogens.

Medical conditions aggravated by exposure: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyper reactivity), skin allergies, eczema.

VII. Employee Protection Recommendations

- Eye Protection: Liquid chemical goggles or full face shield. No contact lenses should be worn.
- Skin Protection: Chemical resistant gloves such as natural rubber, or polyvinyl alcohol. Cover as much as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.
- Respiratory Protection: This product has demonstrated no observable effects at room temperature, however, atmospheric levels should be maintained. In addition, in any spray application or situation where airborne particulates or aerosol are generated, a supplied air source must be provided.
- Ventilation: Natural or mechanical. Local exhaust will keep the TLV below minimum in most cases. Spills or other emergencies may require more forceful ventilation means.
- Other: Safety showers and eye wash stations should be provided in all work areas. All employees should be properly trained.

VIII. Reactivity Data

Stability: Stable under recommended storage conditions.

Polymerization: May occur with incompatible reactants, especially strong bases, water or temperature over 347°F (175°C.). Temperatures over 120°F (49°C) accelerate the reaction with water.

Incompatibility (materials to avoid): Water, acid, bases, metal compounds and surface active materials. Avoid water as it reacts to form heat, CO₂ and insoluble urea. The combined effect of the CO₂ and heat can produce enough presence of the above mentioned materials.

Hazardous Decomposition Products: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

IX. Spill Or Leak Procedure

Steps to be taken in case material is released or spilled:

Cover liquid with an absorbent material (sawdust, vermiculite, or wet sand). After the material is absorbed scoop up and place in an open container. Treat material with the prepared decontamination solution and leave the container open in a well ventilated area for 48 hours. Spill area should also be decontaminated with the following decontamination solution: 90% water, 2% detergent and 8% concentrated ammonia or sodium carbonate.

X. Special Precautions & Storage Data

Storage Temperature (Min/ Max): 65°F. (18°C.) to 75°F. (24°C.)

Average Shelf Life: 6 months from date of mfg.

Special Sensitivity (heat, light, moisture): This product is reactive with water. Containers should be tightly sealed to prevent moisture contamination. A nitrogen blanket should be used for bulk storage at a temperature of 65°F to 75°F. Protect from freezing.

Precautions in Handling and Storage: If contamination of the MDI is suspected, do not re-seal container because of possible rupture due to pressure buildup. Always slowly vent container when opening to relieve any pressure buildup.

XI. Shipping Data

Technical Shipping Name: 4,4 - Diphenylmethane Diisocyanate

Freight Class Bulk: 4,4 - Diphenylmethane Diisocyanate

Freight Class Package: Chemicals, NOI (Isocyanate), NMFC 60000

Product Label: Product Label Established

DOT (HM-181) (Domestic Surface) Hazard Class or Division: Non-regulated

IMO/IMDG Code (OCEAN) Hazard Class or Division: Non-regulated

For further information, contact Townsend Atelier, LLC 423-903-1488

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MATERIAL SAFETY DATA SHEET: TOWNSEND CASTING RESIN™ “B”

I. Product Identification - “B” Component - Polymeric Isocyanate

Product Name: Townsend Casting Resin: Two-Component Casting Urethane
Product Code: 200006, 200005, 200004, 200003, 200002
Emergency contact: 423-903-1488
Chemical Family: Polymeric Isocyanate
Chemical Name: Polymeric Diphenylmethane 4,4 Diisocyanate
Synonyms: MDI, ISO, “B” Component
CAS Number: See Below

II. Hazardous Ingredients*

Components:	Approx. %	
Current TLV/PEL		
Hydroxyl Terminated Poly (Oxyalkylene) Polyether Cas# 9082-00-2	40 - 60	N.E.
Amine Bearing Hydroxyl Terminated Poly (Oxyalkylene) Polyether Cas# 25214-63-5	30 - 40	N.E.

* Ingredients not precisely identified are proprietary or not hazardous. Values are not product specifications.

III. Physical Data

Appearance: Viscous Liquid
Color: Clear To Water White
Odor: Mild Odor
Molecular WT: N/A
Melt Point / Freeze Point: <-13°F. (<-20°C.)
Boiling Point: Decomposes
Vapor Pressure: < 30 MM HG
Vapor Density (Air = 1): > 1.0
Specific Gravity: 1.026
Solubility In Water: Slightly Soluble
VOC %: 0

IV. Fire & Explosion Data

Flash Point: 360°F. (182°C.) PMCC

Flammable Limits In Air By Volume -

Lower: N.E (Nonvolatile Fluid)

Upper: N.E (Nonvolatile Fluid)

Extinguishing Media: Dry chemical extinguishers such as Monoammonium Phosphate, Potassium Sulphate, Potassium Chloride. Additionally, Carbon Dioxide, high expansion (Protenic) chemical foam, water spray for large fires.

Special Fire Fighting Procedure: Do not direct solid water stream or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use self-contained breathing apparatus and body covering protective clothing; burning can produce oxides of carbon and nitrogen.

V. Health Hazard Information

Animal Toxicity

Oral, LD50 (ingestion):	N.E.
Dermal, LDS50 (skin contact):	N.E.
Inhalation, LC50 (4 HR):	N.E.
Eyes:	N.E.
Skin:	N.E.
Aquatic, LC50 (24 HR):	N.E.

Human Effects of Overexposure

Inhalation:	No evidence of adverse effects from available information.	
Skin:	No evidence of adverse effects from available information.	
Ingestion:	No evidence of adverse effects from available information.	
Threshold Limit Value (ACGIH):	No TLV has been established.	
Permissible Exposure Limit (OSHA):	Same as above.	
Suspected Carcinogenic:		
Federal OSHA:	Not regulated.	
CAL OSHA:	Not regulated.	
NTP:	Not listed.	
IARC:	Not listed.	

Medical conditions aggravated by exposure: No data available.

VI. Emergency & First Aid Procedures

Eye contact:	Flush with clean, lukewarm water at low pressure for at least 15 minutes, occasionally lifting eyelids. Not considered to have any adverse effects.
Skin Contact:	Remove contaminated clothing. Wash exposed area thoroughly with warm soapy water. Contaminated clothing should be properly laundered before reusing. Not considered to have any adverse effects.
Inhalation:	Remove victim from area of exposure to safe area. Not considered to have any adverse effects.
Ingestion:	Induce vomiting. Never give anything to drink to an unconscious person or induce vomiting in an unconscious person. Not considered to have adverse effects.

VII. Employee Protection Recommendations

Eye Protection:	Liquid chemical goggles or full-face shield. No contact lenses should be worn.
Skin Protection:	Chemical resistant gloves such as natural rubber, or polyvinyl alcohol. Cover as much as possible with appropriate clothing.
Respiratory Protection:	This product has demonstrated no observable effects at room temperature; however, it is highly recommended that an air-purifying respirator with organic filter cartridges be worn. In addition, in any spray application, a supplied air source must be provided.
Ventilation:	Natural or mechanical. Local exhaust will keep the TLV below minimum in most cases.
Other:	Safety showers and eye wash stations should be provided in all work areas. All employees should be properly trained.

VIII. Reactivity Data

Stability:	Stable.
Polymerization:	Will not occur.
Incompatibility (materials to avoid):	Avoid contact with isocyanates and other substances that react with hydroxyl groups.
Hazardous Decomposition Products:	Aliphatic fragments, CO, NH ₃ , CO ₂ .

IX. Spill or Leak Procedures

Steps to be taken in case material is spilled or released:

Contain the spilled material and then cover with a loose, absorbent material such as oildry, vermiculite, sawdust, or fuller's earth. Shovel waste material into proper waste containers. Wash the contaminated areas with hot soapy water thoroughly. Ventilate area to remove vapors.

Waste Disposal Methods: Waste material may be incinerated or disposed of under local, state and federal regulations controlling environmental protection.

X. Special Precautions & Storage Data

Storage Temperature (Min/ Max):	65°F. (18°C.) to 75°F. (24°C.)
Average Shelf Life:	6 months from date of mfg.
Special Sensitivity (heat, light, moisture):	This product is hygroscopic. Containers should be tightly sealed to prevent moisture contamination. Do not expose to high temperatures for any length of time as aldehydes may be formed.
Precautions in Handling and Storage:	If contamination with isocyanates is suspected, do not re-seal container because of possible rupture due to pressure buildup. Always slowly vent container when opening to relieve any pressure buildup.

XI. Shipping Data

Technical Shipping Name:	Polyether Polyol Blend
Dot Hazard Classification:	Non-regulated
Freight Class Bulk:	Polypropylene Glycol
Freight Class Package:	Polypropylene Glycol
Product Label:	"B" Component Polyol
Place Cards Required:	None
HMIS:	F-1, H-2, R-0

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