MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NUMBER: 800-424-9300     DATE: 07/01     NAME: ROTO-ONE “A”

I. PRODUCT IDENTIFICATION
CHEMICAL TYPE: Extended Polyurethane Isocyanate.

REV. 01/2013

II. INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>%</th>
<th>TLV (ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymethylene Polyphenyl Isocyanate</td>
<td>009016-87-9</td>
<td>61</td>
<td>0.005 ppm</td>
</tr>
<tr>
<td>containing 4,4’ Methylene bisphenyl isocyanate</td>
<td>000101-68-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Molecular Weight Plasticizer</td>
<td>6846-60-0</td>
<td>39</td>
<td>Not Found</td>
</tr>
</tbody>
</table>

III. PHYSICAL DATA

APPEARANCE & ODOR: Dark brown liquid with slightly musty, fruity odor. BOILING POINT: >406°F. @ 5 mm Hg
SPECIFIC GRAVITY: 1.122 at 20°C. VAPOR PRESSURE: 4 mm Hg @ 121°C. SOLUBILITY IN WATER: Slight. Reacts slowly with water to liberate CO₂ gas.

IV. FIRE & EXPLOSION DATA

FLASH POINT: 262°F Pensky-Martens Closed Cup
EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, high expansion (proteinic) chemical foam, water spray for large fires.
SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters.
UNUSUAL FIRE OR EXPLOSION HAZARDS: Combustible liquid. During fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. At temperatures greater than 400°F, polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cool water to cool fire exposed containers.

V. REACTIVITY DATA

STABILITY: Stable under normal conditions.
INCOMPATIBILITY (MATERIALS TO AVOID): Water, amines, strong bases, alcohols.
HAZARDOUS POLYMERIZATION: May occur if in contact with moisture or other materials which react with isocyanates. May occur at temperatures over 400°F.
HAZARDOUS DECOMPOSITION PRODUCTS: By high heat and fire: carbon monoxide, nitrogen oxides, traces of HCN, MDI vapors or aerosols.

VI. HEALTH HAZARD DATA

GENERAL: No toxicity information is available on this specific preparation; this health hazard assessment is based on information that is available on the properties of its components.
PRIMARY ROUTES OF ENTRY: Skin, inhalation.
INHALATION: Although MDI is low in volatility, an inhalation hazard can exist from MDI aerosols or vapors formed during heating, foaming or spraying.
ACUTE EXPOSURE: MDI vapors or mist at concentrations above the TLV can irritate the mucous membranes in the respiratory tract causing runny nose, sore throat, coughing, chest discomfort and reduced lung function. Persons with a preexisting, non-specific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema. These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g. chills, fever) has also been reported. These symptoms may be immediate or delayed up to several hours after exposure.
CHRONIC EXPOSURE: As a result of previous repeated overexposures or a large single overdose, certain individuals develop isocyanate sensitization which will cause them to react to a later exposure to isocyanate at levels well below the TLV. 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. Overexposure to isocyanates has also been reported to cause lung damage which may be permanent.
SENSITIZATION can be either temporary or permanent.
SKIN CONTACT: ACUTE EXPOSURE: Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.
CHRONIC EXPOSURE: Individuals in some cases may develop skin sensitization to isocyanate developing the acute exposure symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.
EYE CONTACT: ACUTE EXPOSURE: Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling. Untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible.
CHRONIC EXPOSURE: None found.
INGESTION: ACUTE EXPOSURE: Can result in irritation and corrosive action in the mouth, stomach and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.
CHRONIC EXPOSURE: None found.
CARCINOGENICITY: None of the ingredients are listed by NTP, IARC, or regulated by OSHA as a carcinogen.
FIRST AID PROCEDURES: SKIN: Wash material off skin with plenty of soap and water. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposure, seek medical attention if irritation develops or persists after the area is washed. Do not reuse clothing until cleaned.
EYES: Flush with copious amounts of water for at least 15 minutes holding eyelids open. Get medical attention immediately.
INGESTION: DO NOT INDUCE VOMITING. Give 1 to 2 cups of milk or water to drink. Do not give anything by mouth to an unconscious person. Get medical attention immediately.
INHALATION: Move to area free of risk to further exposure. Administer oxygen or artificial respiration as needed. Get medical attention.
VII. SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during cleanup. MAJOR SPILL: If temporary control of isocyanate vapor is required, a blanket of protein foam may be placed over the spill. Large quantities may be pumped into closed, but not sealed, container for disposal. MINOR SPILL: Absorb material with sawdust or other absorbent, shovel into suitable 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 neutralizer per part of spill. Allow to stand uncovered for 48 hours to let CO₂ escape. CLEANUP: Decontaminate floor with decontaminating solution, letting stand for at least 15 minutes. WASTE DISPOSAL METHOD: Dispose of according to federal, state and local environmental control regulations. Inclusion is the preferred method. Decontaminate containers prior to disposal. Empty containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. Vapors and gases may be toxic.

VIII. SPECIAL PROTECTION INFORMATION
TLV OR SUGGESTED CONTROL VALUE: No ACGIH TLV or OSHA PEL is assigned to this mixture. Control of exposure to below the TLV for the ingredients (see Section II) may not be sufficient. Minimize exposures in accordance with good hygiene practice. ACGIH TLV for MDI is 0.005 ppm 8 hour TWA. The OSHA PEL for MDI is 0.02 ppm, ceiling. NIOSH recommends 0.005 ppm TWA and 0.02 ppm STEL. These control limits do not apply to previously sensitized individuals or those with existing respiratory disease. EYE PROTECTION: Liquid chemical goggles or full face shield. SKIN PROTECTION: Gloves determined to be impervious under conditions of use. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Tests indicate that clothing constructed of butyl rubber, nitrile rubber and some neoprene garments have excellent resistance to permeation by MDI. RESPIRATORY PROTECTION: Because of low vapor pressure, ventilation is usually sufficient to keep vapors below the TLV at room temperatures. Exceptions are when the material is heated, sprayed or used in a poorly ventilated area. In such cases or whenever concentrations exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full facepiece or an air supplied hood. Air purifying (cartridge type) respirators are not approved for protection against isocyanates. VENTILATION: Local exhaust should be used to keep airborne concentrations below the TLV whenever MDI is processed, heated or sprayed. OTHER PROTECTIVE EQUIPMENT: Eyewash station and safety shower in work area.

IX. SPECIAL PRECAUTIONS
Store in tightly sealed containers to protect from atmospheric moisture. Temperatures below 55° F. will cause a separation of the solution that is reversible by heating to about 75° F. and tumbling or rolling container to mix. Material quality will deteriorate if stored at temperatures over 100° F. (3-6 months). Educate and train employees in safe use of product.

X. REGULATORY INFORMATION
TSCA (Toxic Substances Control Act) Regulations, 40 CFR 710: All ingredients are on the TSCA Section 8 (B) Inventory. CERCLA and SARA Regulations (40 CFR 355, 370 and 372): SECTION 313 SUPPLIER NOTIFICATION: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372: Methylene bis(phenylisocyanate), MDI (CAS # 00101-68-8) RQ 5,000 lbs.30%. Polymeric Diphenylmethane Diisocyanate (CAS # 009016-87-9) 61% STATE REGULATIONS: CALIFORNIA PROPOSITION 65: No warnings are necessary. DOT CLASSIFICATION: Single containers less than 5,000 lbs. are not regulated. Single containers with 5,000 lbs or more of 4,4'-MDI are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, P511, RQ.

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NOT PART OF THE MSDS:
Reference to Section VII. SPILL OR LEAK PROCEDURES: See MSDS for “SIDE B” for further information.
# MATERIAL SAFETY DATA SHEET

**EMERGENCY TELEPHONE NUMBER:** 800-424-9300  
**DATE:** 07/01  
**NAME:** ROTO-ONE ‘B’  
**REV.** 01/2013

## I. PRODUCT IDENTIFICATION

**CHEMICAL TYPE:** Extended Polyether Polyol

## II. INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>%</th>
<th>TLV (ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyether Polyol</td>
<td>(CAS Unassigned)</td>
<td>47</td>
<td>Not Established</td>
</tr>
<tr>
<td>High Molecular Weight Plasticizer</td>
<td>(CAS 006846-50-0)</td>
<td>53</td>
<td>Not established</td>
</tr>
</tbody>
</table>

## III. PHYSICAL DATA

**APPEARANCE & ODOR:** Clear liquid with slightly fruity odor  
**BOILING POINT:** 536° F.  
**SPECIFIC GRAVITY:** .983 at 20°C.  
**VAPOR PRESSURE:** 4 mm Hg @ 121° C.  
**SOLUBILITY IN WATER:** Partial

## IV. FIRE & EXPLOSION DATA

**FLASH POINT:** 262° F. Pensky-Martens Closed Cup  
**EXTINGUISHING MEDIA:** Dry chemical, carbon dioxide, high expansion (proteinic) chemical foam.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters.  
**UNUSUAL FIRE OR EXPLOSION HAZARDS:** Combustible liquid. Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture.

## V. REACTIVITY DATA

**STABILITY:** Stable  
**INCOMPATIBILITY (MATERIALS TO AVOID):** Oxidizing agents and isocyanates.  
**HAZARDOUS POLYMERIZATION:** Will not occur.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** By high heat and fire: carbon monoxide.

## VI. HEALTH HAZARD DATA

**GENERAL:** No toxicity information is available on this specific preparation; this health hazard assessment is based on information that is available on the properties of its components.  
**PRIMARY ROUTES OF ENTRY:** Skin, inhalation.  
**INHALATION:** Low hazard for usual industrial handling.  
**SKIN CONTACT:** Low hazard for usual industrial handling.  
**EYE CONTACT:** Liquid is minimally irritating to the eyes.  
**INGESTION:** Ingestion may result in gastric upset.  
**CARCINOGENICITY:** None of the ingredients are listed by NTP, IARC, or regulated by OSHA as a carcinogen.  
**FIRST AID PROCEDURES:** SKIN: Wash material off skin with plenty of soap and water. Seek medical attention if irritation develops or persists after the area is washed. Do not reuse clothing until cleaned. EYES: Flush with copious amounts of water for at least 15 minutes holding eyelids open. Refer individual to medical attention for immediate follow-up. INGESTION: If ingested, consult physician. INHALATION: Move to area free of risk to further exposure. Administer oxygen or artificial respiration as needed. Get medical attention.

## VII. SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Remove all possible ignition sources. MAJOR SPILL: Large quantities may be pumped into storage/salvage vessels. MINOR SPILL: Absorb material with sawdust or other absorbent, shovel into suitable containers for proper disposal. CLEANUP: Flush area with water to remove trace residue. WASTE DISPOSAL METHOD: Waste must be disposed of according to federal, state and local environmental control regulations. Decontaminate containers prior to disposal. Empty containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.

## VIII. SPECIAL PROTECTION INFORMATION

**TLV OR SUGGESTED CONTROL VALUE:** No ACGIH TLV or OSHA PEL is assigned to this mixture. Minimize exposure in accordance with good hygiene practice. **EYE PROTECTION:** Liquid chemical goggles or full face shield. **SKIN PROTECTION:** Chemical resistant gloves recommended. **RESPIRATORY PROTECTION:** If respiratory protection is needed, use MSHA/NIOSH approved respirator for organic vapor. **VENTILATION:** Local exhaust should be sufficient to control airborne concentrations. **OTHER PROTECTIVE EQUIPMENT:** None
IX. SPECIAL PRECAUTIONS
Store in tightly sealed containers to protect from atmospheric moisture. Educate and train employees in safe use of product.

X. REGULATORY INFORMATION
TSCA (Toxic Substances Control Act) Regulations, 40 CFR 710: All ingredients are on the TSCA Section 8 (B) Inventory.
CERCLA and SARA Regulations (40 CFR 355, 370 and 372): Section 313 Supplier Notification: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372: None
STATE REGULATIONS: CALIFORNIA PROPOSITION 65: No warnings are necessary.
DOT CLASSIFICATION: Not Regulated.

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NOT PART OF THE MSDS:
Reference to Section VII. SPILL OR LEAK PROCEDURES: Another method widely used to dispose of spilled resin is to measure the amount of spilled resin and mix with the proper amount of the other side (A or B) in a bucket. Let the material harden into a solid block for easy, safer disposal as a solid. NOTE: if the resin has picked up water or a lot of moisture during the spill, the water will react when the resins "A" and "B" are mixed together as a "blowing" agent. In other words, the material will expand in volume depending on how much moisture has been added.

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