SECTION 1: IDENTIFICATION

1.1 PRODUCT IDENTIFIER
Product Name: ISOCYANATE - ISO COMPONENT A

1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE
Product Use: Spray Foam Insulation
Use this product in accordance with all local, regional, national and international regulations.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET
Name/Address: Gaco Western LLC
1245 Chapman Dr.
Waukesha, WI, 53186-5942
USA
Telephone Number: 800-331-0196 / International: 001-800-331-0196
Email: sds@gaco.com
Website: www.gaco.com

1.4 EMERGENCY TELEPHONE NUMBER
For Chemical Emergency
Spill, Leak, Fire, Exposure, or Incident
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1-703-527-3887 (collect calls accepted)

SECTION 2: HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE CHEMICAL
Hazard class:

<table>
<thead>
<tr>
<th>HAZARD CLASSIFICATION</th>
<th>CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity – Inhalation</td>
<td>4</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>2</td>
</tr>
<tr>
<td>Eye Damage/Irritation</td>
<td>2B</td>
</tr>
<tr>
<td>Sensitization – Skin</td>
<td>1</td>
</tr>
<tr>
<td>Sensitization – Respiratory</td>
<td>1</td>
</tr>
<tr>
<td>STOT SE – Specific Target Organ Toxicity (Single Exposure)</td>
<td>3</td>
</tr>
<tr>
<td>STOT RE – Specific Target Organ Toxicity (Repeated Exposure)</td>
<td>1</td>
</tr>
</tbody>
</table>

2.2 LABEL ELEMENTS
Hazard pictogram: GHS07, GHS08
Signal word: Danger

Hazard statement: Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
Harmful if inhaled
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause respiratory irritation
Causes damage to organs (Respiratory) through prolonged or repeated (inhalation) exposure

Prevention: Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/eye protection/face protection.
In case of inadequate ventilation, wear respiratory protection.

Response: Specific treatment (see Section 8 on this label).
If on skin: Wash with plenty of water.
If skin irritation or a rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
If skin irritation or a rash occurs: Get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a poison/doctor.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 ADDITIONAL INFORMATION
Main symptoms: Prolonged exposure may cause chronic effects. Causes damage to organs (lungs) through prolonged or repeated (inhalation) exposure. Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.

Hazards not otherwise specified: None Known

5.0% of the mixture consists of ingredient(s) of unknown acute toxicity

3.1 MIXTURES

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS No.</th>
<th>Weight %*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymeric Diphenylmethane Diisocyanate (pMDI)</td>
<td>9016-87-9</td>
<td>50-60%</td>
</tr>
</tbody>
</table>
SECTION 4: FIRST-AID MEASURES

4.1 DESCRIPTION OF THE FIRST AID MEASURES

General information: If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Inhalation: Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Skin contact: Immediately remove contaminated clothing and shoes. Wash off with soap and water. Use lukewarm water if possible. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops.

Eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Get medical attention.

Ingestion: Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Prolonged exposure may cause chronic effects.
May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure.
Skin irritation. May cause redness and pain.
May cause allergic skin reaction. Dermatitis. Rash.
Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Difficulty breathing.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Acute: Diisocyanate vapors or mist at concentrations above the TLV or PEL 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 (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are
usually reversible.

Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.

Causes eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing. May cause irritation of the digestive tract. Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

Note to physicians: Treat symptomatically. Symptoms may be delayed.

**Eyes:** Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

**Skin:** This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.

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

**Inhalation:** Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

Specific treatments: In case of accident or if you feel unwell, seek medical advice (show the label or SDS where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

**General hazards:** No unusual fire or explosion hazard.

**Suitable extinguishing media:** Foam, CO2 or dry powder. Water spray may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

**Specific hazards:** During fire, gases hazardous to health may be formed. May include, and are not limited to: carbon oxides (CO, CO2) nitrogen oxides (NO, NO2 etc.) hydrocarbons, isocyanate vapors, and hydrogen cyanide.

5.3 Special protective equipment and precautions for fire-fighters (PPE)

**Special protective equipment for fire-fighters:**
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Special fire-fighting procedures:** Keep upwind of fire. Move containers from fire area if you can do it without risk.

During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Immediately contact emergency personnel. Evacuate the area. Keep upwind to avoid inhalation of vapors. Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including respiratory protection. Use suitable protective equipment (section 8). Keep unauthorized persons away.

#### 6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING - UP

**Methods for containment:**

Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

**Spill and Leak Procedures:**

Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc...). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface.

Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Check for residual surface contamination using Swype® test kits, available from Colorimetric Laboratories, Inc. (CLI) at 847-803-3737. If the Swype® test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat...
applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on Swype® pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.

Additional Spill Procedures/Neutralization:

Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate includes:

Products available through industrial suppliers:

- Spartan Chemical Company: 1-800-537-8990:
  - Spartan® ShineLine Emulsifier Plus
  - Spartan® SC-200 Heavy Duty Cleaner
- Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737
  - Isocyanate Decontamination Solution
- A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).

  - Mix equal amounts of the following:
    - Mineral spirits (80%), VM&P Naphtha (15%), and household detergent (5%), and
    - A 50-50 mixture of monoethanolamine and water
    - In a separate container, blend the two solutions in a 1:1 ratio by volume. Immediately prior to applying this blended neutralization solution onto the contaminated surface area, mix or agitate the container to help ensure uniform mixing of the ingredients.

If the above products are not available, the following products can be obtained through retail outlets:

- ZEP® Commercial Heavy-Duty Floor Stripper
- Greased Lightning® Super Strength Cleaner and Degreaser
- EASY OFF® Grill and Oven Cleaner or EASY OFF® Fume Free Oven Cleaner
- A mixture of 50% Simple Green® Pro HD Heavy-Duty Cleaner and 50% household ammonia
- A mixture of 90% Fantastic® Heavy Duty All Purpose Cleaner and 10% household ammonia.

Note: Always wear proper PPE when cleaning up an isocyanate spill and using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Check for residual surface contamination using a surface wipe method such as the CLI Swype® pad.

Environmental precautions: Avoid discharge into drains, water courses or onto the ground.

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Safe handling advice: Observe good industrial hygiene practices.

Do not breath vapors, mists, or dusts. Use adequate ventilation to
keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are NOT adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do NOT breathe smoke and gases created by over heating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

General hygiene advice: Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Storage: Storage Period: 6 Months: after receipt of material by customer
Store away from incompatible materials.
Minimum: 50°F (10°C)
Maximum: 86°F (30°C)

Specific use: Spray Foam Insulation
Technical measures: No specific recommendations.
Incompatible materials: Copper, copper alloy and galvanized surfaces. Moisture sensitive.
Safe storage: Store away from incompatible materials. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

Safe packaging material: No specific recommendations.
Precautions: Use personal protective recommended in Section 8 of the SDS.
Safe handling advice: Observe good industrial hygiene practices.
Suitable storage conditions: Store away from incompatible materials. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

Handling-technical measures: No specific recommendations.
Local and general ventilation: Provide adequate ventilation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Control parameters: Follow standard monitoring procedures.

Exposure limits:

4,4'-Diphenylmethane Diisocyanate (MDI)

OSHA:
PEL-C ppm: 0.02
PEL-C mg/m³: 0.2

NIOSH:
REL-TWA ppm: 0.005
REL-TWA mg/m³: 0.05
8.2 EXPOSURE CONTROLS

Engineering/Industrial Hygiene/Ventilation measures to reduce exposure:

Local exhaust should be used to maintain levels below the TLV whenever MDI is heated, sprayed, or aerosolized. Standard reference sources regarding industrial ventilation (e.g., ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation. To ensure that published exposure limits have not been exceeded, monitoring for airborne diisocyanate should become part of the overall employee exposure characterization program. NIOSH, OSHA, and others have developed sampling and analytical methods.

8.3 INDIVIDUAL PROTECTIVE MEASURES

General: Use personal protective equipment as required. Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history or eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Eye protection: When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full-face shield when there is a greater risk of splash.

Hand protection: Gloves should be worn., Nitrile rubber showed excellent resistance., Butyl rubber, neoprene and PVC are also effective.

Respiratory protection: Airborne MDI concentrations greater than the ACGIH TLV-TWA (TLV) or OSHA PEL-C (PEL) can occur in inadequately ventilated environments when MDI is sprayed, aerosolized, or heated. In such cases, respiratory
protection must be worn. The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134). The type of respiratory protection available includes (1) an atmosphere-supplying respirator such as a self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR) in the positive pressure or continuous flow mode, or (2) an air-purifying respirator (APR). If an APR is selected then (a) the cartridge must be equipped with an end-of-service life indicator (ESLI) certified by NIOSH, or(b) a change out schedule, based on objective information or data that will ensure that the cartridges are changed out before the end of their service life, must be developed and implemented. The basis for the change out schedule must be described in the written respirator program. Further, if an APR is selected, the airborne diisocyanate concentration must be no greater than 10 times the TLV or PEL. The recommended APR cartridge is an organic vapor/particulate filter combination cartridge (OV/P100).

Skin and body protection: Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction., This data reinforces the need to prevent direct skin contact with isocyanates.

Medical Surveillance: All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Control parameters: Follow standard monitoring procedures. Local exhaust should be used to maintain levels below the TLV whenever MDI is heated, sprayed, or aerosolized. Standard reference sources regarding industrial ventilation (e.g. ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation. To ensure that published exposure limits have not been exceeded, monitoring for airborne diisocyanate should become part of the overall employee exposure characterization program. NIOSH, OSHA, and others have developed sampling and analytical methods. These are available through various suppliers. Gaco Western does not supply these sampling methods directly.

Thermal hazards: Wear appropriate thermal protective clothing, when necessary.

Environmental exposure controls: Environmental manager must be informed of all major releases.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Brown liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Brown</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
</tbody>
</table>
Odor: Musty
Odor Threshold: Not available
Physical State: Liquid
pH (at 20°C): Not applicable
Melting Point/Freezing Point: Not available
Initial Boiling Point and Boiling Range: 406.4°F (208°C)
Flash Point: 388.4°F (198°C) ASTM D 93
Evaporation Rate: Not available
Flammability (solid, gaseous): Not Flammable
Lower Flammability/Explosive Limit: Not available
Upper Flammability/Explosive Limit: Not available
Evaporation rate: Not available
Vapor Pressure (mm Hg @25°C): <0.0001
Vapor Density: Not available
Density (lb/gal): 10.279
Relative Density/Specific Gravity: 1.234
Solubility in water/miscibility: Insoluble - reacts slowly with water to liberate CO2 gas
Partition coefficient: n-octanol/water: Not available
Auto-ignition Temperature: Not available
Decomposition Temperature: Not available
Viscosity (at 25°C) g/L: 150-250 mPa.s
Oxidizing Properties: Not available
Explosive Properties: Not available
VOC %: Not available
Solvent content - Organic: Not available
Solvent content - Water: Not available
Solvent content - Solids: Not available
Other information: Not available
Incompatibilities: Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols.

SECTION 10: STABILITY AND REACTIVITY

10.1 REACTIVITY
The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2 CHEMICAL STABILITY
Chemical stability: Material is stable under normal conditions.
Materials to avoid: Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Hazardous reactions: Moisture sensitive. Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerizations.

10.4 CONDITIONS TO AVOID
Contact with incompatible materials. Temperatures above 350°F (177°C).

10.5 INCOMPATIBLE MATERIALS
Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous decomposition products: By fire and high heat: Carbon dioxide (CO2), Carbon monoxide (CO),
SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity: Harmful if inhaled. Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Likely routes of exposure: Skin contact. Eye contact. Inhalation.

Eye: Causes eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

Skin: Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.

Ingestion: Not an expected route of exposure. Expected to be a low ingestion hazard.

Inhalation: Diisocyanate vapors or mist at concentrations above the TLV or PEL 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 (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

LD50/LC50 values relevant to this classification:

4,4’-Diphenylmethane Diisocyanate (MDI)
Oral rat LD50 >2,000 mg/kg bw
Oral rat LD50 >7,616 mg/kg bw
Oral rat LD50 >10,000 mg/kg bw
Inhal rat LC50 369 mg/m³ air 4hr
Inhal rat LC50 >300 mg/m³ air 4hr
Inhal rat LC50 >2.24 mg/L air 1hr
Inhal rat LC50 0.49 mg/L air 4hr
Derm rabbit LD50 >9,400 mg/kg bw

2,4'-Diphenylmethane Diisocyanate (MDI)
   Oral rat LD50 >2,000 mg/kg bw
   Oral rat LD50 >10,000 mg/kg bw
   Inhal rat LC50 310 mg/m3 air 4hr
   Inhal rat LC50 0.49 mg/L air 4hr
   Inhal rat LD50 387-645 mg/m3 bw 4hr
   Derm rabbit LD50 >9,400 mg/kg bw

Calculated overall chemical acute toxicity values for this formulation:

<table>
<thead>
<tr>
<th></th>
<th>Calculated overall Chemical Acute Toxicity Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 (inhalation)</td>
<td>LD50 (oral)</td>
</tr>
<tr>
<td>490 mg/m3 (dust and mist)</td>
<td>&gt;2000 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50 (dermal)</td>
</tr>
<tr>
<td></td>
<td>&gt;2000 mg/kg</td>
</tr>
</tbody>
</table>

11.2 DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE

Skin corrosion/irritation: Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash.
Contact with MDI can cause discoloration. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Serious eye damage/irritation: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Respiratory sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin sensitization: May cause allergic skin reaction. Dermatitis. Rash.

Symptoms and target organs: Prolonged exposure may cause chronic effects. Causes damage to organs (lungs) through prolonged or repeated (inhalation) exposure. Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Chronic health effects: Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the TLV or PEL. 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. Extreme asthmatic reactions can be life threatening. 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. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to
prevent direct skin contact with isocyanates.

Prolonged vapor contact with the eyes may cause conjunctivitis.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

**Carcinogenicity:**
This preparation does not contain a component that is considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA (Occupational Safety and Health Administration) or NTP (National Toxicological Program).
Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

**Mutagenicity:**
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Reproductive Toxicity:**
This product is not expected to cause reproductive or developmental effects.

**Specific Target Organ Toxicity (STOT):**
- **Single Exposure:** May cause respiratory irritation.
- **Repeated Exposure:** Causes damage to organs (lungs) through prolonged or repeated (inhalation) exposure.

**Aspiration Toxicity:**
Based on available data, this product is not expected to cause aspiration toxicity.

**Other Information:**
Not available.

### SECTION 12: ECOLOGICAL INFORMATION

**12.1 ECOTOXICITY**

**Acute/Chronic toxicity:**
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Aquatic toxicity:**
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Environmental effects:**
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**12.2 PERSISTENCE AND DEGRADABILITY**

**Persistence/biodegradability:**
The product contains substances which are not expected to be readily biodegradable.
0%, exposure time: 28d, i.e. not readily degradable

**12.3 BIOACCUMULATIVE POTENTIAL**

**Bioaccumulation:**
Onchorhynchus mykiss (rainbow trout), exposure time: 112 d, <1 BCF i.e. does not bioaccumulate

**12.4 MOBILITY**

**Mobility:**
No data available.

**Mobility in soil:**
No data available.

**Mobility in non-soil:**
No data available.

**12.5 OTHER ADVERSE EFFECTS**
13.1 WASTE TREATMENT METHODS
Disposal method: This material must be disposed of in accordance with all local, state, provincial, and federal regulations. Incineration is the preferred method.

Contaminated packaging: Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal.

EU codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Residual waste: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents and container in accordance with all local, regional, national and international regulations.

Waste codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Other disposal recommendations: None

SECTION 14: TRANSPORT INFORMATION

DOT Non-Bulk
Not classified as Dangerous Goods for Transport

DOT Bulk (>5,000 lbs)
UN: NA3082
Proper shipping name: Other regulated substances, liquid, n.o.s. (4,4’-Diphenylmethane Diisocyanate (MDI))
Hazard class: 9 Packing group: PG III

IMDG
Not classified as Dangerous Goods for Transport

ICAO/IATA
Not classified as Dangerous Goods for Transport

Reportable Quantity:
4,4’-Diphenylmethane Diisocyanate (MDI) RQ: 5,040 kg (11,111 lbs)

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATIONS SPECIFIC FOR THE CHEMICAL
US Federal Regulations:

U.S. OSHA (Occupational Safety and Health Administration) Specifically Regulated Substances (29 CFR 1910.1001-1050)

No components of this product are present at concentration greater than or equal to 0.1% and are identified as a carcinogen or potential carcinogen by OSHA.

SARA/CERCLA reporting requirements:
The following components of this product are found at concentrations greater than or equal to 0.1% and are subject to SARA/CERCLA reporting requirements.

<table>
<thead>
<tr>
<th>Material</th>
<th>SARA 302 (EHS) EHS TPQ</th>
<th>SARA 304 EHSs RQ</th>
<th>CERCLA RQ</th>
<th>SARA 313 listed</th>
<th>RCRA CODE</th>
<th>CAA 112(r) TQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymeric Diphenylmethane Diisocyanate (pMDI)</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>313</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>4,4'-Diphenylmethane Diisocyanate (MDI)</td>
<td>Not listed</td>
<td>Not listed</td>
<td>5,000</td>
<td>X</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

State Right-to-Know Regulations

The following components of this product are found at concentrations greater than or equal to 0.1%, subject to state Right-to-Know reporting requirements; or are found at any concentration and are listed under California Proposition 65.

<table>
<thead>
<tr>
<th>Material</th>
<th>California Proposition 65</th>
<th>Massachus etts Right-to-Know</th>
<th>Minnesota Employee Right-to-Know</th>
<th>New Jersey Community Environmental Hazard Right-to-Know</th>
<th>New Jersey Right-to-Know Substance</th>
<th>Pennsylvania Right-to-Know</th>
<th>Rhode Island Right-to-Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymeric Diphenylmethane Diisocyanate (pMDI)</td>
<td>Not listed</td>
<td>Listed</td>
<td>Not listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
</tr>
<tr>
<td>4,4'-Diphenylmethane Diisocyanate (MDI)</td>
<td>Not listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
</tr>
<tr>
<td>2,4'-Diphenylmethane Diisocyanate (MDI)</td>
<td>Not listed</td>
<td>Listed</td>
<td>Not listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Global Inventories:

<table>
<thead>
<tr>
<th>Notification status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>US - TSCA</td>
</tr>
<tr>
<td>Canada - DSL</td>
</tr>
<tr>
<td>Canada - NDSL</td>
</tr>
<tr>
<td>EU - EINECS</td>
</tr>
<tr>
<td>EU - ELINCS</td>
</tr>
<tr>
<td>EU - NLP</td>
</tr>
<tr>
<td>Australia – AICS</td>
</tr>
<tr>
<td>China - EiCSC</td>
</tr>
<tr>
<td>Japan - ENCS</td>
</tr>
<tr>
<td>Korea - KECI</td>
</tr>
<tr>
<td>Taiwan - NECI</td>
</tr>
<tr>
<td>New Zealand - NZIoC</td>
</tr>
<tr>
<td>Philippine - PICCS</td>
</tr>
</tbody>
</table>

EU - REACH Status:

A registration number is not available for substances in this mixture as the substances are exempted from registration, the annual tonnage does not require a registration or the registration is envisioned for a later registration deadline.

CANADA – WHMIS (Workplace Hazardous Materials Information System) Classification:
D1A, D2A, D2B
HMIS (Hazardous Materials Identification System) rating:

<table>
<thead>
<tr>
<th>Health</th>
<th>2*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Physical</td>
<td>1</td>
</tr>
</tbody>
</table>

NFPA 704 (National Fire Protection Association) rating:

<table>
<thead>
<tr>
<th>Health</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend:
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- ICAO: International Civil Aviation Organization
- IMDG: International Maritime Dangerous Goods
- ACGIH: American Conference of Governmental Industrial Hygienists
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- PPE: Personal Protective Equipment
- RCRA: Resource Conservation and Recovery Act
- AAA: Clean Air Act
- SARA: Superfund Amendments and Reauthorization Act
- EPCRA: Emergency Planning and Community Right-to-Know Act
- WHMIS: Workplace Hazardous Materials Information System
- EU: European Union
- REACH: Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
- CERCLA: Comprehensive Environmental Response, Compensation and Liability Act
- TSCA: US Toxic Substances Control Act (TSCA)
- DSL: Canada Domestic Substance List (DSL)
- NDSL: Canada Non-Domestic Substance List (NDSL)
- EINECS: European Inventory of Existing Commercial Chemical Substances (EINECS)
- ELINCS: European List of Notified Chemical Substances (ELINCS)
- NLP: European list of No-longer Polymers (NLP)
- AICS: Australian Inventory of Chemical Substances (AICS)
- EICSC: China Existing Chemical Inventory – IECSC
- ENCS: Japanese Existing and New Chemical Substances Inventory (ENCS)
- KECI: Korea Existing Chemicals Inventory (KECI)
- NECI: Taiwan National Existing Chemical Inventory (NECI)
- NZIoC: New Zealand Inventory of Chemicals (NZIoC)
- PICCS: Philippine Inventory of Chemicals and Chemical Substances (PICCS)
- HMIS: Hazardous Materials Identification System
- NFPA: National Fire Protection Association (NFPA)
Date of preparation: March 6, 2017
Version: 1.1
Revision Date: March 6, 2017

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user’s responsibility to satisfy oneself as to the suitability and completeness of this information for the user’s own particular use.

Prepared by: Gaco Western LLC

End of Safety Data Sheet