One Step Insulation Adhesive Part A

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier
Product Name • One Step Insulation Adhesive Part A

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified use(s) • Construction

1.3 Details of the supplier of the safety data sheet
Manufacturer • Firestone Building Products Company
250 West 96th Street
Indianapolis, IN 46260
United States

geneflexmsds@bfdp.com

Telephone (General) • 800-428-4442

1.4 Emergency telephone number
Manufacturer • (800) 424-9300 - CHEMTREC
Manufacturer • (703) 527-3887 - CHEMTREC - International

Section 2: Hazards Identification

EU/EEC
According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture
CLP • Skin Irritation 2 - H315
Skin Sensitization 1 - H317
Eye Irritation 2 - H319
Acute Toxicity Inhalation 3 - H331
Respiratory Sensitization 1 - H334
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Carcinogenicity 2 - H351
Specific Target Organ Toxicity Repeated Exposure 2 - H373

DSD/DPD • Harmful (Xn)
Irritant (Xi)
Carcinogenic Substances - Category 3
R20, R36/37/38, R40, R42/43, R48/20

2.2 Label Elements
CLP

DANGER

Preparation Date: 31/January/2012
Revision Date: 10/February/2015

Format: EU CLP/REACH Language: English (US)
WHMIS, EU CLP, EU DSD/DPD, OSHA HCS 2012

Page 1 of 18
**Hazard statements**

- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H331 - Toxic if inhaled
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 - May cause respiratory irritation
- H351 - Suspected of causing cancer.
- H373 - May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements**

**Prevention**
- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P260 - Do not breathe mist/vapours/spray.
- P264 - Wash thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P280 - Wear protective gloves and eye/face protection.
- P281 - Use personal protective equipment as required.
- P285 - In case of inadequate ventilation wear respiratory protection.

**Response**
- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P321 - Specific treatment, see supplemental first aid information.
- P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
- P362 - Take off contaminated clothing and wash before reuse.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P314 - Get medical advice/attention if you feel unwell.

**Storage/Disposal**
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
- P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Risk phrases**
- R20 - Harmful by inhalation.
- R36/37/38 - Irritating to eyes, respiratory system and skin.
- R40 - Limited evidence of a carcinogenic effect.
- R42/43 - May cause sensitisation by inhalation and skin contact.
- R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.

**Safety phrases**
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36 - Wear suitable protective clothing.
- S37 - Wear suitable gloves.
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S53 - Avoid exposure - obtain special instructions before use.

**2.3 Other Hazards**

**CLP**
- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

**DSD/DPD**
- According to European Directive 1999/45/EC this preparation is considered dangerous.

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**United States (US)**

According to: OSHA 29 CFR 1910.1200 HCS
2.1 Classification of the substance or mixture

OSHA HCS 2012

- Skin Irritation 2
- Skin Sensitization 1A
- Eye Irritation 2
- Acute Toxicity Inhalation 2
- Respiratory Sensitization 1A
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
- Specific Target Organ Toxicity Repeated Exposure 1

2.2 Label elements

OSHA HCS 2012

**DANGER**

**Hazard statements**

- Causes skin irritation
- May cause an allergic skin reaction
- Causes serious eye irritation
- Fatal if inhaled
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause respiratory irritation
- Causes damage to organs through prolonged or repeated exposure

**Precautionary statements**

**Prevention**

- Do not breathe mist/vapours/spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection.
- In case of inadequate ventilation wear respiratory protection.

**Response**

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- If on skin: Wash with plenty of water.
- If skin irritation or rash occurs: Get medical advice/attention.
- Take off contaminated clothing and wash before reuse.
- 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.
- Specific treatment is urgent, see supplemental first aid information.
- Get medical advice/attention if you feel unwell.

**Storage/Disposal**

- Store in a well-ventilated place. Keep container tightly closed.
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Supplemental information**

- 75 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

OSHA HCS 2012


Canada

According to: WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Very Toxic - D1A
- Other Toxic Effects - D2A
2.2 Label elements

**WHMIS**

- Very Toxic - D1A
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

2.3 Other hazards

**WHMIS**

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

### Section 3 - Composition/Information on Ingredients

#### 3.1 Substances

- Material does not meet the criteria of a substance.

#### 3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers</th>
<th>%</th>
<th>LD50/LC50</th>
<th>Classifications According to Regulation/Directive</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>CAS:9016-87-9</td>
<td>25% TO 50%</td>
<td>Ingestion/Oral-Rat LD50 • 49 g/kg</td>
<td>EU DSD/DPD: Self Classified: Xn, R20-48/20; Xn, R42/43, Xi, R36/37/38; Carc. 3, R40</td>
<td>NDA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inhalation-Rat LC50 • 490 mg/m³ 4 Hour(s)</td>
<td>EU CLP: Self Classified: Acute Tox. 2 (mist), H330; STOT RE 2, H373; Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335; Skin Irrit. 2, H315; Resp. Sens. 1, H334; Skin Sens. 1, H317; Carc. 2, H351</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin-Rabbit LD50 • &gt;9400 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
<td>CAS:101-68-8</td>
<td>25% TO 50%</td>
<td>Ingestion/Oral-Rat LD50 • 9200 mg/kg</td>
<td>EU DSD/DPD: Annex VI, Table 3.2: Carc. Cat. 3; R40; Xn; R20-48/20; Xi; R36/37/38, R42/43</td>
<td>NDA</td>
</tr>
<tr>
<td></td>
<td>EC Number:202-966-0</td>
<td></td>
<td>Inhalation-Rat LC50 • 178 mg/m³</td>
<td>EU CLP: Annex VI, Table 3.1: Carc. 2, H351; Acute Tox. 4, H332; STOT RE 2 *, H373; Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335; Skin Irrit. 2, H319; Resp. Sens. 1, H334; Skin Sens. 1, H317</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EU Index:615-005-00-9</td>
<td></td>
<td></td>
<td>OSHA HCS 2012: Skin Irrit. 2, Eye Irrit. 2, Skin Sens. 1, Resp. Sens. 1, STOT SE 3: Resp. Irrit.; STOT RE 1 (Lungs);</td>
<td></td>
</tr>
<tr>
<td>Diphenylmethane diisocyanate</td>
<td>CAS:26447-40-5</td>
<td>2.5% TO 10%</td>
<td>NDA</td>
<td>EU DSD/DPD: Annex VI, Table 3.2: Carc. Cat. 3; R40; Xn; R20-48/20; Xi; R36/37/38, R42/43</td>
<td>NDA</td>
</tr>
<tr>
<td></td>
<td>EC Number:247-714-0</td>
<td></td>
<td></td>
<td>EU CLP: Annex VI, Table 3.1: Carc. 2, H351; Acute Tox. 4, H332; STOT RE 2 *, H373; Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335; Skin Irrit. 2, H315; Resp. Sens. 1, H334; Skin Sens. 1, H317</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EU Index:615-005-00-9</td>
<td></td>
<td></td>
<td>OSHA HCS 2012: Eye Irrit. 2; STOT SE 3: Resp. Irrit.; Skin Irrit. 2; Resp. Sens. 1A; Skin Sens. 1A; STOT RE 1</td>
<td></td>
</tr>
</tbody>
</table>
Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation
- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Keep patient warm. Get medical attention immediately if symptoms occur.

Skin
- Wash skin with soap and water. Take off contaminated clothing and wash before reuse. If irritation develops and persists, get medical attention.

Eye
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion

4.2 Most important symptoms and effects, both acute and delayed
- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- CO2, extinguishing powder or water spray. Fight larger fires with water spray.

Unsuitable Extinguishing Media
- Do not use a direct stream of water.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Dried solids can burn and release toxic fumes and vapors.

Hazardous Combustion Products
- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Move fire exposed containers if safe to do so. Cool fire exposed containers with water spray. Dike contaminated fire-control water for later disposal.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Ventilate enclosed areas. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids. Stay upwind. Keep out of low areas. Keep unauthorized personnel away. Ventilate closed spaces before entering.
6.2 Environmental precautions

- Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

**Containment/Clean-up Measures**

- Stop leak if you can do it without risk.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- LARGE SPILLS: Dike far ahead of spill for later disposal.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

### Section 7 - Handling and Storage

7.1 Precautions for safe handling

**Handling**

- Use only with adequate ventilation. Prevent formation of aerosols. Keep away from water as reaction can be initiated by water exposure. Persons with sensitivity to isocyanate should not handle/use this product. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist/vapours/spray. Avoid contact with skin, eyes, and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

**Storage**

- Store in a cool, dry, well-ventilated place. Keep container tightly closed. Protect from atmospheric moisture. Keep away from heat, sparks and flame.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

### Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines</th>
<th>Result</th>
<th>ACGIH</th>
<th>Canada Alberta</th>
<th>Canada British Columbia</th>
<th>Canada Manitoba</th>
<th>Canada New Brunswick</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWAs</td>
<td>Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)</td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>0.005 ppm TWA; 0.05 mg/m3 TWA</td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.051 mg/m3 TWA (listed under Methylene bisphenyl isocyanate)</td>
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<tr>
<td>TWAs</td>
<td>Polymethylene polyphenyl isocyanate (9016-87-9)</td>
<td>Not established</td>
<td>Not established</td>
<td>0.01 ppm Ceiling (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines (Con't.)</th>
<th>Result</th>
<th>Canada Northwest Territories</th>
<th>Canada Nova Scotia</th>
<th>Canada Nunavut</th>
<th>Canada Ontario</th>
<th>Canada Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>0.005 ppm TWA; 0.07 mg/m3 TWA</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Compound</td>
<td>Ceilings</td>
<td>TWAs</td>
<td>MAKs</td>
<td>MAWs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diphenylmethane diisocyanate</strong> (26447-40-5)</td>
<td>Not established</td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>Not established</td>
<td>0.05 mg/m³ Peak (inhaleable fraction)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Isocyanic acid, methylenedi-p-phenylene ester</strong> (101-68-8)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Exposure Limits/Guidelines (Con't.)

<table>
<thead>
<tr>
<th>Result</th>
<th>Canada Saskatchewan</th>
<th>Canada Yukon</th>
<th>Denmark</th>
<th>Germany DFG</th>
<th>Germany TRGS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TWAs</strong></td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>Not established</td>
<td>0.005 ppm TWA; 0.05 mg/m³ TWA</td>
<td>Not established</td>
<td>0.05 mg/m³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, ceiling factor 2, exposure factor 1)</td>
</tr>
<tr>
<td><strong>Ceilings</strong></td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>MAKs</strong></td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

### Notes
- AGW: The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction.
- MAK: Maximum Admissible Concentration.
- TWWAEV: Time Weighted Average Exposure Value.
- BGW: Biological Exposure Guideline.
<table>
<thead>
<tr>
<th>isocyanate (9016-87-9)</th>
<th></th>
<th></th>
<th></th>
<th>MDI, exposure factor 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>0.05 mg/m3 Peak (inhalable fraction)</td>
</tr>
<tr>
<td>MAKs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>0.05 mg/m3 TWA MAK (inhalable fraction)</td>
</tr>
</tbody>
</table>

| Exposure Limits/Guidelines (Con’t.) |
|---|---|---|
| Result | NIOSH | OSHA |
| Diphenylmethane diisocyanate (26447-40-5) | Ceilings | Not established | 0.02 ppm Ceiling; 0.2 mg/m3 Ceiling |
| Isocyanic acid, methylenedi-p-phenylene ester (101-68-8) | Ceilings | 0.020 ppm Ceiling (10 min); 0.2 mg/m3 Ceiling (10 min) | 0.02 ppm Ceiling; 0.2 mg/m3 Ceiling |
| | TWAs | 0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.05 mg/m3 TWA | Not established |

**Exposure Control Notations**

**Germany TRGS**
- Isocyanic acid, methylenedi-p-phenylene ester (101-68-8): **Carcinogens**: (Category 3 as inhalable aerosol, alveola fraction)) | **Developmental Toxins**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction)) | **Reproductive Toxins**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction)) | **Germ Cell Mutagens**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction))
- Polymethylene polyphenyl isocyanate (9016-87-9): **Carcinogens**: (Category 3 as inhalable aerosol, alveola fraction)) | **Developmental Toxins**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction)) | **Reproductive Toxins**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction)) | **Germ Cell Mutagens**: (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveoli fraction)) | **Skin**: (skin notation (calculated as MDI))

**Germany DFG**
- Isocyanic acid, methylenedi-p-phenylene ester (101-68-8): **Carcinogens**: (Category 4 (no significant contribution to human cancer)) | **Pregnancy**: (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction, see also polymeric MDI)) | **Sensitizers**: (respiratory and skin sensitizer (inhalable fraction)) | **Skin**: (skin notation)
- Polymethylene polyphenyl isocyanate (9016-87-9): **Carcinogens**: (Category 4 (no significant contribution to human cancer)) | **Pregnancy**: (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction)) | **Sensitizers**: (respiratory and skin sensitizer (inhalable fraction)) | **Skin**: (skin notation)

**Exposure Limits Supplemental ACGIH**
- Isocyanic acid, methylenedi-p-phenylene ester (101-68-8): **TLV Basis - Critical Effects**: (respiratory sensitization (listed under Methylene bisphenyl isocyanate (MDI)))

### 8.2 Exposure controls

**Engineering Measures/Controls**
- This material is designed to be used outdoors, in roofing applications. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal Protective Equipment**

**Respiratory**
- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

**Eye/Face**
- Wear chemical splash safety goggles.
### Section 9 - Physical and Chemical Properties

#### 9.1 Information on Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Physical Form</th>
<th>Appearance/Description</th>
<th>Odor Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquid</td>
<td>Off white to light amber liquid with faint aromatic odor.</td>
<td>Data lacking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
</tr>
<tr>
<td>Specific Gravity/Relative Density</td>
</tr>
<tr>
<td>Viscosity</td>
</tr>
<tr>
<td>Oxidizing Properties:</td>
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</table>

<table>
<thead>
<tr>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Pressure</td>
</tr>
<tr>
<td>Evaporation Rate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flammability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
</tr>
<tr>
<td>LEL</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octanol/Water Partition coefficient</td>
</tr>
</tbody>
</table>

#### 9.2 Other Information

- No additional physical and chemical parameters noted.

### Section 10: Stability and Reactivity

#### 10.1 Reactivity

- There is a potential for violent reaction if contaminated with water.

#### 10.2 Chemical stability

- Stable under normal temperatures and pressures.

#### 10.3 Possibility of hazardous reactions

- Danger of polymerization. Reacts violently with water.

#### 10.4 Conditions to avoid

- Contact with moisture, other materials that react with isocyanates, or temperatures
above 350°F (177°C), may cause polymerization.

10.5 Incompatible materials

- Reacts with amines, caustic alkali solutions, alcohols, ammonia, oxidizers, acids, polyols. Reacts with water forming carbon dioxide—may rupture sealed containers if contaminated with water. May produce violent reactions with bases and numerous organic substances including alcohols and amines.

10.6 Hazardous decomposition products

- Carbon dioxide, carbon monoxide, oxides of nitrogen, dense black smoke, hydrogen cyanide, isocyanic acid, other undetermined compounds.

### Section 11 - Toxicological Information

#### 11.1 Information on toxicological effects

| Components | Acute Toxicity: Ingestion/Oral-Rat LD50 • 9200 mg/kg; Behavioral:Somnolence (general depressed activity); Behavioral:Ataxia; Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Body temperature decrease; Inhalation-Rat LC50 • 178 mg/m³; Irritation: Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s); Mutagen: DNA adduct • Inhalation-Rat • 2 mg/m³ 52 Week(s)-Intermittent; Micronucleus test • Inhalation-Rat • 7.1 mg/m³ 3 Hour(s); DNA adduct • Inhalation-Rat • 0.002 mg/L 17 Hour(s) 1 Year(s); Reproductive: Inhalation-Rat TCLo • 9 mg/m³ 6 Hour(s) 6-15D preg; Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system |
| Isocyanic acid, methylenedi-p-phenylene ester (25% TO 50%) | 101-68-8 |

| Components | Acute Toxicity: Ingestion/Oral-Rat LD50 • 49 g/kg; Behavioral:Somnolence (general depressed activity); Gastrointestinal:Hypermotility, diarrhea; Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Body temperature decrease; Inhalation-Rat LC50 • 490 mg/m³ 4 Hour(s); Sense Organs and Special Senses:Eye:Other; Lungs, Thorax, or Respiration:Respiratory depression; Blood:Hemorrhage; Skin-Rabbit LD50 • >9400 mg/kg; Irritation: Eye-Rabbit • 100 mg • Mild irritation; Reproductive: Inhalation-Rat TCLo • 12 mg/m³ 6 Hour(s) 6-15D preg; Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Effects on Embryo or Fetus:Extra embryonic structures; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system |
| Polymethylene polyphenyl isocyanate (25% TO 50%) | 9016-87-9 |

### GHS Properties

<table>
<thead>
<tr>
<th>GHS Properties</th>
<th>Classification</th>
</tr>
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<tbody>
<tr>
<td>Acute toxicity</td>
<td>EU/CLP • Acute Toxicity - Inhalation 3 - ATEmix(inhl)=0.748 mg/L</td>
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<tr>
<td></td>
<td>OSHA HCS 2012 • Acute Toxicity - Inhalation 2 - ATEmix(inhl)=0.49 mg/L</td>
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<tr>
<td>Aspiration Hazard</td>
<td>EU/CLP • Classification criteria not met</td>
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<td></td>
<td>OSHA HCS 2012 • Classification criteria not met</td>
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<tr>
<td>Carcinogenicity</td>
<td>EU/CLP • Carcinogenicity 2; Suspected of causing cancer</td>
</tr>
<tr>
<td></td>
<td>OSHA HCS 2012 • Classification criteria not met</td>
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<tr>
<td>Germ Cell Mutagenicity</td>
<td>EU/CLP • Classification criteria not met</td>
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<tr>
<td></td>
<td>OSHA HCS 2012 • Classification criteria not met</td>
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<tr>
<td>Skin corrosion/Irritation</td>
<td>EU/CLP • Skin Irritation 2</td>
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<td>OSHA HCS 2012 • Skin Irritation 2</td>
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<tr>
<td>Skin sensitization</td>
<td>EU/CLP • Skin Sensitizer 1</td>
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<td>OSHA HCS 2012 • Skin Sensitizer 1A</td>
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<td>STOT-RE</td>
<td>EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2</td>
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<td>OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1</td>
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</table>

EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
### Potential Health Effects

#### Inhalation

**Acute (Immediate)**
- Toxic if inhaled. May cause respiratory irritation.

**Chronic (Delayed)**
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.

#### Skin

**Acute (Immediate)**
- Causes skin irritation. May cause skin sensitization. Symptoms include redness and skin rash.

**Chronic (Delayed)**
- No data available.

#### Eye

**Acute (Immediate)**
- Causes serious eye irritation.

**Chronic (Delayed)**
- No data available.

#### Ingestion

**Acute (Immediate)**
- Although swallowing this product is an unlikely means of exposure, irritation of the mouth, pharynx, esophagus and stomach can develop following ingestion.

**Chronic (Delayed)**
- No data available

#### Other

**Chronic (Delayed)**
- Causes damage to the lungs through prolonged or repeated exposure via Inhalation. Long-term effect of isocyanic acid, methylenedi-p-phenylene ester on the respiratory system of 318 workers suggests that such workers may develop fibrosis. Long-term exposure tends to restrict pulmonary function and cause decrease in CO single breath transfer factor.

#### Carcinogenic Effects

- May cause cancer.

---

### Section 12 - Ecological Information

#### 12.1 Toxicity

- Material data lacking.

#### 12.2 Persistence and degradability

- Material data lacking.

#### 12.3 Bioaccumulative potential

- Material data lacking.

#### 12.4 Mobility in Soil

- Material data lacking.
12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>14.2 UN proper shipping name</th>
<th>14.3 Transport hazard class(es)</th>
<th>14.4 Packing group</th>
<th>14.5 Environmental hazards</th>
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<tr>
<td>DOT</td>
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<td>NDA</td>
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14.6 Special precautions for user

- None specified.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

- Acute, Chronic

State Right To Know

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>MA</th>
<th>NJ</th>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
<td>101-68-8</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
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Inventory

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<th>Component</th>
<th>CAS</th>
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<th>Canada NDSL</th>
<th>EU EINECS</th>
<th>EU ELNICS</th>
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<tr>
<td>Substance</td>
<td>CAS Number</td>
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<td>Canada</td>
<td>Environment</td>
<td>Denmark</td>
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<tr>
<td>Diphenylmethane diisocyanate</td>
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<td>No</td>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
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</tr>
</tbody>
</table>

**Belgium**

**Labor**

Belgium - Substances and Preparations - Carcinogens and Mutagens

- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**Canada**

**Labor**

Canada - WHMIS - Classifications of Substances

- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 D1A, D2A, D2B
- Polymethylene polyphenyl isocyanate 9016-87-9 D1A, D2A, D2B

Canada - WHMIS - Ingredient Disclosure List

- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 0.1 %
- Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**Environment**

Canada - CEPA - Priority Substances List

- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**Denmark**

**Environment**

Denmark - List of Undesirable Substances - Product Groups/Function

- Diphenylmethane diisocyanate 26447-40-5 Binders (listed under Certain isocyanates); Curing agents (listed under Certain isocyanates); Glues (listed under Certain isocyanates); Paints (listed under Certain isocyanates); Coatings (listed under Certain isocyanates); Molding compounds (listed under Certain isocyanates); Binders; Curing agents; Glues; Paints; Coatings; Molding compounds
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8
- Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**Europe**

Preparation Date: 31/January/2012
Revision Date: 10/February/2015
Format: EU CLP/REACH Language: English (US)
### Other

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

<table>
<thead>
<tr>
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<th>CAS Number</th>
<th>Classification</th>
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<tbody>
<tr>
<td>Diphenylmethane diisocyanate</td>
<td>26447-40-5</td>
<td>Xn; R20-48/20 Xi; R36/37/38 Carc.Cat.3; R40 R42/43</td>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
<td>101-68-8</td>
<td>Xn; R20-48/20 Xi; R36/37/38 Carc.Cat.3; R40 R42/43</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
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</table>

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

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<th>CAS Number</th>
<th>Concentration Limits</th>
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<tbody>
<tr>
<td>Diphenylmethane diisocyanate</td>
<td>26447-40-5</td>
<td>5%&lt;=C: Xi; R:36/37/38 0.1% &lt;=C: R:42</td>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
<td>101-68-8</td>
<td>5%&lt;=C: Xi; R:36/37/38 0.1% &lt;=C: R:42</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
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</table>

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

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<th>Labelling</th>
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<tr>
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</table>

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Notes</th>
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<tbody>
<tr>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<td>Polymethylene polyphenyl isocyanate</td>
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#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphenylmethane diisocyanate</td>
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<td>S:(1/2)-23-36/37-45</td>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
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### Germany

#### Labor

##### Germany - Immission Control - Qualifying Quantities for Major Accident Prevention

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Qualifying Quantities</th>
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<tbody>
<tr>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
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##### Germany - Immission Control - Qualifying Quantities for Safety Reporting

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Qualifying Quantities</th>
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<td>Diphenylmethane diisocyanate</td>
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##### Germany - TRGS 505 - Specific Lead Regulations

<table>
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<th>Substance</th>
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<tr>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<td>Polymethylene polyphenyl isocyanate</td>
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##### Germany - TRGS 511 - Specific Ammonium Nitrate Regulations

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<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
<td>9016-87-9</td>
<td>Not Listed</td>
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</tbody>
</table>
Environment

Germany - TA Luft - Types and Classes
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - TA Luft - Emission Limits for Carcinogenic Substances
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - TA Luft - Emission Limits for Fibers
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - TA Luft - Emission Limits for Inorganic Dusts
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - TA Luft - Emission Limits for Inorganic Gases
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - TA Luft - Emission Limits for Organic Substances
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - Water Classification (VwVwS) - Annex 1
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 ID Number 635, hazard class 1 - low hazard to waters
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

Germany - Water Classification (VwVwS) - Annex 3
- Diphenylmethane diisocyanate 26447-40-5 ID Number 8322, hazard class 1 - low hazard to waters
- Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
- Polyethylene polyphenyl isocyanate 9016-87-9 Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals
- Diphenylmethane diisocyanate 26447-40-5 Not Listed
<table>
<thead>
<tr>
<th>Chemical Name</th>
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<tr>
<td>Isocyanic acid, methylenedi-p-phenylene ester</td>
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<tr>
<td>Polymethylene polyphenyl isocyanate</td>
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<tr>
<td>Diphenylmethane diisocyanate</td>
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<td>Polymethylene polyphenyl isocyanate</td>
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</tr>
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</table>

### Environment

#### U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed (listed under Methylene diphenyl diisocyanate)
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 5000 lb final RQ; 2270 kg final RQ
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Section 313 - Emission Reporting
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
  1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
  1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed

#### U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing
- Diphenylmethane diisocyanate: 26447-40-5 Not Listed
- Isocyanic acid, methylenedi-p-phenylene ester: 101-68-8 Not Listed
- Polymethylene polyphenyl isocyanate: 9016-87-9 Not Listed
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Developmental Toxicity**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**United States - Pennsylvania**

**Labor**

**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances**
• Diphenylmethane diisocyanate 26447-40-5 Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester 101-68-8 Not Listed
• Polymethylene polyphenyl isocyanate 9016-87-9 Not Listed

**15.2 Chemical Safety Assessment**

• No Chemical Safety Assessment has been carried out.

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**Section 16 - Other Information**

**Relevant Phrases (code & full text)**

• H330 - Fatal if inhaled
• H332 - Harmful if inhaled

**Last Revision Date** 10/February/2015

**Preparation Date** 31/January/2012

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Preparation Date: 31/January/2012
Revision Date: 10/February/2015
Format: EU CLP/REACH Language: English (US) WHMIS, EU CLP, EU DSD/OPD, OSHA HCS 2012
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Key to abbreviations
NDA = No Data Available