

Safety Data Sheet

Firestone Building Products Company

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

1.1 Product identifier

Product Name • I.S.O.SPRAY™ S Adhesive Part A

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Construction Adhesive

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

firestonemsds@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 Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

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



- 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.

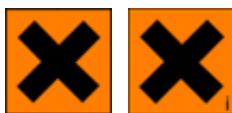
Precautionary statements

- 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 eye/face protection , .
 - P280 - Wear protective gloves .
 - 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.
 - P311 - Call a POISON CENTER or doctor/physician.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
 - P321 - Specific treatment, see supplemental first aid information.
 - 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.

DSD/DPD



- 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 material is considered dangerous.

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 - H315
- Skin Sensitization 1A - H317
- Eye Irritation 2 - H319
- Acute Toxicity Inhalation 2 - H330
- Respiratory Sensitization 1A - H334
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
- Specific Target Organ Toxicity Repeated Exposure 1 - H372

2.2 Label elements**OSHA HCS 2012****DANGER**

- Hazard statements**
- Causes skin irritation - H315
 - May cause an allergic skin reaction - H317
 - Causes serious eye irritation - H319
 - Fatal if inhaled - H330
 - May cause allergy or asthma symptoms or breathing difficulties if inhaled - H334
 - May cause respiratory irritation - H335
 - Causes damage to organs - Lungs through prolonged or repeated exposure - H372

Precautionary statements

- Prevention**
- Do not breathe mist/vapours/spray. - P260
 - Wash thoroughly after handling. - P264
 - Do not eat, drink or smoke when using this product. - P270
 - Use only outdoors or in a well-ventilated area. - P271
 - Contaminated work clothing should not be allowed out of the workplace. - P272
 - Wear eye/face protection. - P280
 - Wear protective gloves. - P280
 - Wear respiratory protection. - P284
 - In case of inadequate ventilation wear respiratory protection. - P285
- Response**
- IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P341
 - Immediately call a POISON CENTER or doctor/physician. - P310
 - Specific treatment is urgent (see supplemental first aid instructions on this label). - P320
 - If on skin: Wash with plenty of water. - P362
 - Take off contaminated clothing and wash before reuse. - P362
 - If skin irritation or rash occurs: Get medical advice/attention. - P333+P313
 - Specific treatment, see supplemental first aid information. - P321
 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
 - If eye irritation persists: Get medical advice/attention. - P337+P313
 - Get medical advice/attention if you feel unwell. - P314
- Storage/Disposal**
- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

- Supplemental information**
- 45 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards**OSHA HCS 2012**

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

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

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 in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Polymethylene polyphenyl isocyanate	CAS:9016-87-9	45% TO 55%	Ingestion/Oral-Rat LD50 • 49 g/kg Inhalation-Rat LC50 • 490 mg/m ³ 4 Hour(s) Skin-Rabbit LD50 • >9400 mg/kg	EU DSD/DPD: Self Classified: Xn R20-48/20 Xn R42/43 Xi R36/37/38 Carc. Cat. 3 R40 EU CLP: Self Classified: 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; Acute Tox. 2, H330 OSHA HCS 2012: Eye Irrit. 2; Skin Irrit. 2; Skin Sens. 1A; STOT SE 3: Resp. Irrit.; Resp. Sens. 1A; STOT RE 1 (Lungs); Acute Tox. 2 (inhl)	NDA
Isocyanic acid, methylenedi-p-phenylene ester	CAS:101-68-8 EC Number:202-966-0 EU Index:615-005-00-9	35% TO 45%	Ingestion/Oral-Rat LD50 • 9200 mg/kg Inhalation-Rat LC50 • 178 mg/m ³	EU DSD/DPD: Annex VI, Table 3.2: Xn R20-48/20 Xi R36/37/38 Carc.Cat.3 R40 R42/43 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 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2; Skin Sens. 1; Resp. Sens. 1; STOT SE 3: Resp. Irrit.; STOT RE 1 (Lungs)	NDA
	CAS:26447-40-5			EU DSD/DPD: Annex VI, Table 3.2: Xn R20-48/20 Xi R36/37/38 Carc.Cat.3 R40 R42/43 EU CLP: Annex VI, Table 3.1: Carc. 2, H351;	

Diphenylmethane diisocyanate	EC Number:247-714-0 EU Index:615-005-00-9	1% TO 5%	NDA	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 OSHA HCS 2012: Eye Irrit. 2; STOT SE 3: Resp. Irrit.; Skin Irrit. 2; Resp. Sens. 1A; Skin Sens. 1A; STOT RE 1	NDA
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See Section 16 for full text of H-statements and R-phrases.

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. Get medical attention immediately.

Skin

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If irritation develops and persists, get medical attention. Wash contaminated clothing before reuse.

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

- Do NOT induce vomiting. Obtain medical attention immediately if ingested.

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

- LARGE FIRE: Water spray, fog or regular foam.
SMALL FIRES: Dry chemical, CO2 or regular foam.

Unsuitable Extinguishing Media

- No data available.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- Some may burn but none ignite readily.

Hazardous Combustion Products

- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection. Wear positive pressure self-contained breathing apparatus (SCBA). Move containers from fire area if you can do it without risk.
LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear appropriate personal

protective equipment, avoid direct contact. Do not breathe mist/vapours/spray. Avoid contact with skin, eyes, and clothing.

Emergency Procedures

- Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
SMALL SPILLS: Take up with sand or other non-combustible absorbent material and place into containers for later disposal.
LARGE SPILLS: Dike far ahead of liquid spill for later disposal.
Never return spills in original containers for re-use.

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 in well ventilated areas. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist, vapors, 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

- Keep in a cool place. Store in a well-ventilated place. Keep container tightly closed. Avoid moisture contamination as reaction will occur if exposed to moisture.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Belgium	Canada Alberta	Canada British Columbia	Canada Manitoba
Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	0.005 ppm TWA; 0.052 mg/m ³ TWA	0.005 ppm TWA; 0.05 mg/m ³ TWA	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))
	Ceilings	Not established	Not established	Not established	0.01 ppm Ceiling (listed under Methylene bisphenyl isocyanate (MDI))	Not established
Polymethylene polyphenyl isocyanate (9016-87-9)	TWAs	Not established	Not established	0.005 ppm TWA; 0.07 mg/m ³ TWA	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Canada New Brunswick	Canada Northwest Territories	Canada Nova Scotia	Canada Nunavut	Canada Ontario

Diphenylmethane diisocyanate (26447-40-5)	Ceilings	Not established	0.02 ppm Ceiling; 0.2 mg/m ³ Ceiling	Not established	0.02 ppm Ceiling; 0.2 mg/m ³ Ceiling	Not established
Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.051 mg/m ³ TWA (listed under Methylene bisphenyl isocyanate)	Not established	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	Not established	0.005 ppm TWA (designated substances regulation, listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI))); 0.005 ppm TWA (applies to workplaces to which the designated substances regulation does not apply, listed under Methylene bisphenyl isocyanate (MDI))
	Ceilings	Not established	Not established	Not established	Not established	0.02 ppm Ceiling (designated substances regulation, listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI)))

Exposure Limits/Guidelines (Con't.)

	Result	Canada Quebec	Canada Saskatchewan	Canada Yukon	Denmark	Germany DFG
Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	TWAs	0.005 ppm TWAEV; 0.051 mg/m ³ TWAEV	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	Not established	0.005 ppm TWA; 0.05 mg/m ³ TWA	Not established
	Ceilings	Not established	Not established	0.02 ppm Ceiling (Methylene bisphenyl isocyanate (MDI)); 0.2 mg/m ³ Ceiling (Methylene bisphenyl isocyanate (MDI))	Not established	0.05 mg/m ³ Peak (inhalable fraction)
	MAKs	Not established	Not established	Not established	Not established	0.05 mg/m ³ TWA MAK (see also polymeric MDI, inhalable fraction)
Polymethylene polyphenyl isocyanate (9016-87-9)	Ceilings	Not established	Not established	Not established	Not established	0.05 mg/m ³ Peak (inhalable fraction)
	MAKs	Not established	Not established	Not established	Not established	0.05 mg/m ³ TWA MAK (inhalable fraction)

Exposure Limits/Guidelines (Con't.)

	Result	Germany TRGS	NIOSH	OSHA
Diphenylmethane diisocyanate (26447-40-5)	Ceilings	Not established	Not established	0.02 ppm Ceiling; 0.2 mg/m ³ Ceiling

Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	Ceilings	Not established	0.020 ppm Ceiling (10 min); 0.2 mg/m ³ Ceiling (10 min)	0.02 ppm Ceiling; 0.2 mg/m ³ Ceiling
	TWAs	0.05 mg/m ³ 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)	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.05 mg/m ³ TWA	Not established
Polymethylene polyphenyl isocyanate (9016-87-9)	TWAs	0.05 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction, as MDI, exposure factor 1)	Not established	Not established

Exposure Control Notations

Germany TRGS

• 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, alveola fraction)) | **Germ Cell Mutagens:** (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveola fraction)) | **Skin:** (skin notation (calculated as MDI))

• 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, alveola fraction)) | **Germ Cell Mutagens:** (Based on current data, this substance cannot be classified in categories 1-3 (as inhalable aerosol, alveola fraction))

Germany DFG

• 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)

• 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)

8.2 Exposure controls

Engineering Measures/Controls

- This adhesive 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 protective eyewear (goggles, face shield, or safety glasses).

Skin/Body

- Wear appropriate gloves. Wear protective clothing

Environmental Exposure Controls

- In case of spills, keep product clear of sewers, waterways or land areas. Dispose of waste product in accordance with national and local laws and regulations.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

OSHA = Occupational Safety and Health Administration

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

NIOSH = National Institute of Occupational Safety and Health

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Brown liquid.
Color	Brown	Odor	Slight sweet odor.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	207.8 C(406.04 F)	Melting Point	< 0 C(< 32 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	1.24 Water=1 @ 25 C(77 F)	Bulk Density	10.3 lbs/gal
Water Solubility	Insoluble	Viscosity	200 Centipoise (cPs, cP) or mPas @ 25 C(77 F)
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking
Volatility			
Vapor Pressure	Data lacking	Vapor Density	8.5 Air=1
Evaporation Rate	< 1 Ether = 1		
Flammability			
Flash Point	> 198.9 C(> 390.02 F) PMCC (Pensky-Martins Closed Cup)	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Not relevant.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- Reaction will occur if exposed to moisture.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Reaction will occur if exposed to moisture.

10.4 Conditions to avoid

- Keep away from heat, sparks and flame. Keep away from moisture.

10.5 Incompatible materials

- Water, alcohols, amines, alkaline metals.

10.6 Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Polymethylene polyphenyl isocyanate (45% TO 55%)	9016-87-9	<p>Acute Toxicity: Ingestion/Oral-Rat LD50 • 49 g/kg; <i>Behavioral:Somnolence (general depressed activity); Gastrointestinal:Hypermotility, diarrhea; Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Body temperature decrease;</i> Inhalation-Rat LC50 • 490 mg/m³ 4 Hour(s); <i>Sense Organs and Special Senses:Eye:Other; Lungs, Thorax, or Respiration:Respiratory depression;</i> <i>Blood:Hemorrhage;</i> Skin-Rabbit LD50 • >9400 mg/kg;</p> <p>Irritation: Eye-Rabbit • 100 mg • Mild irritation;</p> <p>Reproductive: Inhalation-Rat TClO • 12 mg/m³ 6 Hour(s)(6-15D preg); <i>Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Effects on Embryo or Fetus:Extra embryonic structures; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system</i></p>
Isocyanic acid, methylenedi-p-phenylene ester (35% TO 45%)	101-68-8	<p>Acute Toxicity: Ingestion/Oral-Rat LD50 • 9200 mg/kg; <i>Behavioral:Somnolence (general depressed activity); Behavioral:Ataxia; Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Body temperature decrease;</i></p> <p>Irritation: Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s)</p>

GHS Properties	Classification
Acute toxicity	EU/CLP • Acute Toxicity - Inhalation 3 - ATEmix(inhl) = 0.70 mg/L (dust/mist) OSHA HCS 2012 • Acute Toxicity - Inhalation 2 - ATEmix(inhl) = 0.49 mg/L (dust/mist)
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	EU/CLP • Carcinogenicity 2 OSHA HCS 2012 • Data lacking
Germ Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Skin sensitization	EU/CLP • Skin Sensitizer 1 OSHA HCS 2012 • Skin Sensitizer 1A
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1
STOT-SE	EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Respiratory sensitization	EU/CLP • Respiratory Sensitizer 1 OSHA HCS 2012 • Respiratory Sensitizer 1A
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2

Potential Health Effects

Inhalation

Acute (Immediate)

- Toxic if inhaled. May cause respiratory irritation.

Chronic (Delayed)	<ul style="list-style-type: none"> • May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin	
Acute (Immediate)	<ul style="list-style-type: none"> • Causes skin irritation. May cause skin sensitization. Symptoms include redness and skin rash.
Chronic (Delayed)	<ul style="list-style-type: none"> • No data available.
Eye	
Acute (Immediate)	<ul style="list-style-type: none"> • Causes serious eye irritation.
Chronic (Delayed)	<ul style="list-style-type: none"> • No data available.
Ingestion	
Acute (Immediate)	<ul style="list-style-type: none"> • Ingesting large amounts may cause gastrointestinal disturbances including diarrhea, nausea, and vomiting.
Chronic (Delayed)	<ul style="list-style-type: none"> • No data available.
Other	
Chronic (Delayed)	<ul style="list-style-type: none"> • Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.
Carcinogenic Effects	<ul style="list-style-type: none"> • Repeated and prolonged exposure may cause cancer.
Key to abbreviations	
LC = Lethal Concentration	MOD = Moderate
LD = Lethal Dose	TC = Toxic Concentration
MLD = Mild	

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. Do not attempt to clean or re-use empty containers.

Packaging waste

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

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
ADN	NDA	Not Regulated	NDA	NDA	NDA
ADR/RID	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

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				
Component	CAS	MA	NJ	PA
Diphenylmethane diisocyanate	26447-40-5	Yes	Yes	No
Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	No	No	Yes
Polymethylene polyphenyl isocyanate	9016-87-9	No	Yes	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Diphenylmethane diisocyanate	26447-40-5	Yes	No	Yes	No	Yes
Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Yes	No	Yes	No	Yes
Polymethylene polyphenyl isocyanate	9016-87-9	Yes	No	No	No	Yes

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

Bulgaria

Environment

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 24 Hour

• 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

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 30 Minute

• 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

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - Annual

• 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)
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Binders; Curing agents; Glues; Paints; Coatings; Molding

• Polymethylene polyphenyl isocyanate	9016-87-9	compounds Not Listed
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Europe

Other

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

• Diphenylmethane diisocyanate	26447-40-5	Xn; R20-48/20 Xi; R36/37/38 Carc.Cat.3; R40 R42/43
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Xn; R20-48/20 Xi; R36/37/38 Carc.Cat.3; R40 R42/43
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

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

• Diphenylmethane diisocyanate	26447-40-5	5%<=C: Xi; R:36/37/38 0.1% <=C: R:42
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	5%<=C: Xi; R:36/37/38 0.1% <=C: R:42
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

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

• Diphenylmethane diisocyanate	26447-40-5	Xn R:20-36/37/38-40-42/43- 48/20 S:(1/2)-23-36/37-45
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Xn R:20-36/37/38-40-42/43- 48/20 S:(1/2)-23-36/37-45
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

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

• Diphenylmethane diisocyanate	26447-40-5	C, 2
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	C, 2
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Diphenylmethane diisocyanate	26447-40-5	S:(1/2)-23-36/37-45
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	S:(1/2)-23-36/37-45
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

Germany

Labor

Germany - Immission Control - Qualifying Quantities for Major Accident Prevention

• 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

Germany - Immission Control - Qualifying Quantities for Safety Reporting

• 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

Germany - TRGS 505 - Specific Lead Regulations

• 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

Germany - TRGS 511 - Specific Ammonium Nitrate Regulations

• 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

Environment**Germany - TA Luft - Types and Classes**

• Diphenylmethane diisocyanate	26447-40-5	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	organic Substance: 5.2.5, Class I
• Polymethylene 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
• Polymethylene 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
• Polymethylene 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
• Polymethylene 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
• Polymethylene 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	0.10 kg/h Mass flow (Class I); 20 mg/m ³ Mass concentration (Class I)
• Polymethylene 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
• Polymethylene 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
• Polymethylene 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
• Polymethylene 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
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed
• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• 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

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Diphenylmethane diisocyanate	26447-40-5	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	(listed under Methylene diphenyl diisocyanate)
• 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
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)
• Polymethylene polyphenyl isocyanate	9016-87-9	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)

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

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens 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. - 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.

Section 16 - Other Information**Relevant Phrases (code & full text)**

Last Revision Date

Preparation Date

Disclaimer/Statement of Liability

- H330 - Fatal if inhaled
H332 - Harmful if inhaled
- 17/June/2014
- 06/January/2012
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Key to abbreviations

NDA = No Data Available
