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 • **LiquiGard™ Adhesive Part B**

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

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 2 - H330
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
- H330 - Fatal 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

- 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.
- P284 - Wear respiratory protection.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P285 - In case of inadequate ventilation wear respiratory protection.

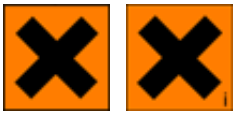
Response

- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P310 - Immediately call a POISON CENTER or doctor/physician.
- P320 - Specific treatment is urgent (see supplemental first aid instructions on this label).
- 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.
- P314 - Get medical advice/attention if you feel unwell.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.

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. This product is considered dangerous according to the European Directive 67/548/EEC.

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 respiratory protection. - P284
  In case of inadequate ventilation wear respiratory protection. - P285

Response

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
  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 .
  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

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

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Polymethylene polyphenyl isocyanate	**CAS:**9016-87-9	100%	Ingestion/Oral-Rat LD50 • 49 g/kg Inhalation-Rat LC50 • 490 mg/m³ 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 **EU CLP:** Self Classified: Acute Tox. 2, 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 **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 *[63% TO 76%]*	**CAS:**101-68-8 **EC Number:**202-966-0 **EU Index:**615-005-00-9	*63% TO 76%*	Ingestion/Oral-Rat LD50 • 9200 mg/kg Inhalation-Rat LC50 • 178 mg/m³	**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; Skin Irrit. 2, H315; STOT SE 3: Resp. Irrit., H335; Resp. Sens. 1, H334; Skin Sens. 1, H317 **OSHA HCS 2012:** Eye Irrit. 2; Skin Irrit. 2; Skin Sens. 1A; STOT SE 3: Resp. Irrit.; Resp. Sens. 1A; STOT RE 1 (Lungs)	NDA

3.2 Mixtures

- Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

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
- Wash skin with soap and water. Wash contaminated clothing 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
- 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
- Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

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. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. 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.
  Absorb or cover with dry earth, sand or other non-combustible material and transfer to

containers.
Do not seal containers.
LARGE SPILLS: Dike far ahead of liquid 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 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. Water contamination will cause dangerous pressure. Keep container closed. Do not reseal contaminated containers. 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. Store indoors at 70° - 95°F in original, unopened containers. Protect from contamination with 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/m3 TWA	0.005 ppm TWA; 0.05 mg/m3 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/m3 TWA	Not established	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**Canada New Brunswick**	**Canada Nova Scotia**	**Canada Ontario**	**Canada Quebec**	**Canada Saskatchewan**
				0.005 ppm TWA (designated substances regulation, listed		

Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.051 mg/m3 TWA (listed under Methylene bisphenyl isocyanate)	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	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))	0.005 ppm TWAEV; 0.051 mg/m3 TWAEV	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))
	Ceilings	Not established	Not established	0.02 ppm Ceiling (designated substances regulation, listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI)))	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Canada Yukon	China	Denmark	Germany DFG	Germany TRGS
Isocyanic acid, methylenedi-p-phenylene ester (101-68-8)	STELs	Not established	0.1 mg/m3 STEL	Not established	Not established	Not established
	TWAs	Not established	0.05 mg/m3 TWA	0.005 ppm TWA; 0.05 mg/m3 TWA	Not established	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)
	Ceilings	0.02 ppm Ceiling (Methylene bisphenyl isocyanate (MDI)); 0.2 mg/m3 Ceiling (Methylene bisphenyl isocyanate (MDI))	Not established	Not established	0.05 mg/m3 Peak (inhalable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.05 mg/m3 TWA MAK (see also polymeric MDI, inhalable fraction)	Not established
Polymethylene polyphenyl isocyanate (9016-87-9)	TWAs	Not established	Not established	Not established	Not established	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, inhalable fraction, as MDI, exposure factor 1)
	Ceilings	Not established	Not established	Not established	0.05 mg/m3 Peak (inhalable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.05 mg/m3 TWA MAK (inhalable	Not established

					fraction)	

Exposure Limits/Guidelines (Con't.)			
	Result	**NIOSH**	**OSHA**
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

•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))

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)

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 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

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Brown liquid with a musty odor.
Color	Brown	Odor	Musty
Odor Threshold	Data lacking		
General Properties			

Boiling Point	597 F(313.8889 C) (Decomposes)	Melting Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	1.24 Water=1	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	< 1E-05 mmHg (torr) @ 25 C(77 F)	Vapor Density	8.5 Air=1
Evaporation Rate	Data lacking	Volatiles (Wt.)	Data lacking
Flammability			
Flash Point	> 400 F(> 204.4444 C)	UEL	Data lacking
LEL	Data lacking	Autoignition	> 1100 F(> 593.3333 C)
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 when properly stored.

10.3 Possibility of hazardous reactions

- Hazardous polymerization may occur with strong bases or at temperatures over 320°F (160°C). Temperatures over 99°C (120°F) accelerate the reaction with water.

10.4 Conditions to avoid

- Excess heat. Keep away from moisture.

10.5 Incompatible materials

- May react with strong oxidizing materials. Avoid contamination with water, acid or strongly alkaline materials, alcohols, metals, soaps and detergents.

10.6 Hazardous decomposition products

- Incomplete combustion can produce isocyanate vapors and mist, and carbon monoxide. Normal combustion may produce oxides of nitrogen.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Polymethylene polyphenyl isocyanate (100%)	9016-87-9	**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**
Impurities, Stabilizers, etc...		
Isocyanic acid, methylenedi-p-phenylene ester (63% TO 76%)	101-68-8	**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 TCLo • 2.4 mg/m³ 6 Hour(s); *Lungs, Thorax, or Respiration*:**Structural or functional change in trachea or bronchi**; *Lungs, Thorax, or Respiration*:**Other changes**; *Biochemical:Metabolism (intermediary)*:**Other proteins**; **Irritation:** Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s)

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Inhalation 2 **OSHA HCS 2012** • Acute Toxicity - Inhalation 2
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)
- Fatal 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)
- Single dose toxicity is extremely low and not likely to cause injury.

Chronic (Delayed)
- No data available.

Other

Chronic (Delayed)
- 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
- 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.

Key to abbreviations

LC = Lethal Concentration
LD = Lethal Dose
TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

- Based on information for MDI and polymeric MDI, material is practically non-toxic to aquatic organisms on an acute basis (LC50 greater than 100 mg/L in most sensitive species). Material reacts with water, forming insoluble polyurea which is stable.

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**
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**	**China**	**EU EINECS**	**EU ELNICS**
Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Yes	No	Yes	Yes	No
Polymethylene polyphenyl isocyanate	9016-87-9	Yes	No	Yes	No	No

Inventory (Con't.)				
Component	**CAS**	**Japan ENCS**	**Korea KECL**	**TSCA**
Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Yes	Yes	Yes
Polymethylene polyphenyl isocyanate	9016-87-9	Yes	Yes	Yes

Australia

Labor

Australia - Work Health and Safety Regulations - Hazardous Substances Requiring Health Monitoring

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Australia - High Volume Industrial Chemicals List

• Polymethylene polyphenyl isocyanate	9016-87-9

• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	

Australia - List of Designated Hazardous Substances - Classification

• Polymethylene polyphenyl isocyanate	9016-87-9	Xn, Xi R20, R36/37/38, R42
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Xn, Xi Carc.Cat.3 R40, R20, R48/20, R36/37/38, R42/43

Environment

Australia - National Pollutant Inventory (NPI) Substance List

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	10 tonne/yr Threshold category 1

Australia - Ozone Protection Act - Scheduled Substances

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Australia - Priority Existing Chemical Program

• Polymethylene polyphenyl isocyanate	9016-87-9	Candidate chemical
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Candidate chemical

Belgium

Labor

Belgium - Substances and Preparations - Carcinogens and Mutagens

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Bulgaria

Environment

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

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

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

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

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

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Polymethylene polyphenyl isocyanate	9016-87-9	D1A, D2A, D2B
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	D1A, D2A, D2B

Canada - WHMIS - Ingredient Disclosure List

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	0.1 %

Environment

Canada - CEPA - Priority Substances List

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

China

Other

China - Annex I & II - Controlled Chemicals Lists

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Denmark

Environment

Denmark - List of Undesirable Substances - Product Groups/Function

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Binders; Curing agents; Glues; Paints; Coatings; Molding compounds

Europe

Other

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

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

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

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

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

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

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

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

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

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

Germany

Labor

Germany - Immission Control - Qualifying Quantities for Major Accident Prevention

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - Immission Control - Qualifying Quantities for Safety Reporting

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TRGS 505 - Specific Lead Regulations

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TRGS 511 - Specific Ammonium Nitrate Regulations

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Environment

Germany - TA Luft - Types and Classes

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	organic Substance: 5.2.5, Class I

Germany - TA Luft - Emission Limits for Carcinogenic Substances

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TA Luft - Emission Limits for Fibers

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TA Luft - Emission Limits for Inorganic Dusts

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TA Luft - Emission Limits for Inorganic Gases

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - TA Luft - Emission Limits for Organic Substances

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	0.10 kg/h Mass flow (Class I); 20 mg/m3 Mass concentration (Class I)

Germany - Water Classification (VwVwS) - Annex 1

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	ID Number 635, hazard class 1 - low hazard to waters

Germany - Water Classification (VwVwS) - Annex 3

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

Environment

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

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	(listed under Methylene diphenyl diisocyanate)

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	5000 lb final RQ; 2270 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Polymethylene polyphenyl isocyanate	9016-87-9	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Polymethylene polyphenyl isocyanate	9016-87-9	Not Listed
• Isocyanic acid, methylenedi-p-phenylene ester	101-68-8	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H332 - Harmful if inhaled

Last Revision Date

- 30/October/2014

Preparation Date

- 22/July/2014

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Key to abbreviations

NDA = No Data Available