

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 • UltraFlash™ Two-Part Liquid Flashing Part B Activator II

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
200 4th Avenue S
Nashville, TN 37201-2208
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 2015/830]

2.1 Classification of the substance or mixture

CLP

- Skin Irritation 2 - H315
- Skin Sensitization 1 - H317
- Eye Irritation 2 - H319
- 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

2.2 Label Elements

CLP

DANGER

Hazard statements • H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
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 mists, vapours, and/or spray.
P264 - Wash thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P284 - In case of inadequate ventilation wear respiratory protection.
- Response** • P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P321 - Specific treatment, see supplemental first aid information.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it 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.
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.

2.3 Other Hazards

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

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 1
Eye Irritation 2A
Respiratory Sensitization 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Carcinogenicity 2
Specific Target Organ Toxicity Repeated Exposure 2

2.2 Label elements

OSHA HCS 2012

DANGER



- Hazard statements** • Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause respiratory irritation
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

- Prevention** • Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mists, vapours, and/or spray.

Wash thoroughly after handling.

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 person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
If on skin: Wash with plenty of water.
Specific treatment, see supplemental first aid information.
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.
IF exposed or concerned: Get medical advice/attention.
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.

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



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
			Ingestion/Oral-Rat LD50 • 49 g/kg	EU CLP: Acute Tox. 2, H330; STOT RE 2, H373; Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335;	

Polymethylene polyphenyl isocyanate	CAS: 9016-87-9	90% TO 100%	Inhalation-Rat LC50 • 490 mg/m ³ 4 Hour(s) Skin-Rabbit LD50 • >9400 mg/kg	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 [55% TO 65%]	CAS: 101-68-8 EC Number: 202-966-0 EU Index: 615-005-00-9	49.5% TO 65%	Ingestion/Oral-Rat LD50 • 9200 mg/kg Inhalation-Rat LC50 • 178 mg/m ³	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.

See Section 16 for full text of H-statements.

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

- Rinse mouth. Get medical attention if symptoms occur.

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

- Do not use a direct stream of water.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- During fire, gases hazardous to health may be formed.

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**
- 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**
- Keep unauthorized personnel away. Stay upwind. Keep out of low areas.

6.2 Environmental precautions

- Avoid run off to waterways and sewers.

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 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 vapors, dust, or spray mist, vapors, and/or 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. Store indoors at 70° - 95°F in original, unopened containers. Protect from contamination with moisture 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)	Not established

Polymethylene polyphenyl isocyanate (9016-87-9)	TWAs	Not established	Not established	0.005 ppm TWA; 0.07 mg/m ³ TWA	isocyanate (MDI)) Not established	Not established
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Exposure Limits/Guidelines (Con't.)

	Result	Canada New Brunswick	Canada Nova Scotia	Canada Ontario	Canada Quebec	Canada Saskatchewan
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)	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	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))	0.005 ppm TWAEV; 0.051 mg/m ³ 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/m ³ STEL	Not established	Not established	Not established
	TWAs	Not established	0.05 mg/m ³ TWA	0.005 ppm TWA; 0.05 mg/m ³ TWA	Not established	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)
	Ceilings	0.02 ppm Ceiling (listed under Methylene bisphenyl isocyanate (MDI)); 0.2 mg/m ³ Ceiling (listed under Methylene bisphenyl isocyanate (MDI))	Not established	Not established	0.05 mg/m ³ Peak (inhalable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.05 mg/m ³ 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/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)
	Ceilings	Not established	Not established	Not established	0.05 mg/m ³ Peak (inhalable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.05 mg/m ³ TWA MAK (inhalable fraction)	Not established

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/m ³ Ceiling (10 min)	0.02 ppm Ceiling; 0.2 mg/m ³ Ceiling
	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.05 mg/m ³ TWA	Not established

Exposure Control Notations

Canada Ontario

•Isocyanic acid, methylenedi-p-phenylene ester (101-68-8): **Designated Substances:** (0.005 ppm TWA (listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI))); 0.02 ppm Ceiling (listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI))))

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): **Skin:** (skin notation)

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)

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 certified respirator if exposure limits are

exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

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

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

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

TWAEV = Time-Weighted Average Exposure Value

OSHA = Occupational Safety and Health Administration

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Brown liquid with a musty odor.
Color	Brown	Odor	Musty
Odor Threshold	0.4 ppm		
General Properties			
Boiling Point	> 572 °F(> 300 °C)	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	= 1.2 Water=1	Water Solubility	Insoluble
Viscosity	40 to 60 Centipoise (cPs, cP) or mPas @ 77 °F(25 °C)	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	< 7E-06 hPa	Vapor Density	8.5 Air=1
Evaporation Rate	Data lacking	Volatiles (Wt.)	Data lacking
Flammability			
Flash Point	> 392 °F(> 200 °C)	UEL	Data lacking
LEL	Data lacking	Autoignition	> 1112 °F(> 600 °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 under normal temperatures and pressures.

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, amines, alkaline metals, acids, alcohols.

10.6 Hazardous decomposition products

- None known.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components	
Polymethylene polyphenyl isocyanate (90% TO 100%)	9016-87-9 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/m ³ 4 Hour(s); <i>Sense Organs and Special Senses:Eye:Other; Lungs, Thorax, or Respiration:Respiratory depression; Blood:Hemorrhage;</i> Skin -Rabbit LD50 • >9400 mg/kg; Irritation: Eye-Rabbit • 100 mg • Mild irritation; Reproductive: Inhalation-Rat TClO • 12 mg/m ³ 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>
Impurities, Stabilizers, etc...	
Isocyanic acid, methylenedi-p-phenylene ester (49.5% TO 65%)	101-68-8 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> Inhalation-Rat TClO • 2.4 mg/m ³ 6 Hour(s); <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Other changes;</i> <i>Biochemical:Metabolism (intermediary):Other proteins;</i> Irritation: Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s)

GHS Properties	Classification
Acute toxicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2A
Skin sensitization	EU/CLP • Skin Sensitizer 1 OSHA HCS 2012 • Skin Sensitizer 1
Respiratory sensitization	EU/CLP • Respiratory Sensitizer 1 OSHA HCS 2012 • Respiratory Sensitizer 1
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	EU/CLP • Carcinogenicity 2; Suspected of causing cancer OSHA HCS 2012 • Carcinogenicity 2
Germ Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking

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
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 2

Potential Health Effects

Inhalation

Acute (Immediate)

- 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)

- Expected to be a low ingestion hazard.

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.
- 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.

Carcinogenic Effects

Key to abbreviations

LC = Lethal Concentration

LD = Lethal Dose

TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

- This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

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 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	Yes	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; Adhesives; 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/m ³ 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
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• 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, under Methylenebis (phenylisocyanate))
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)**

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

Revision Date

- 29/January/2018

Preparation Date

- 19/November/2015

Other Information

- Changes to this revision: Updated mailing address.

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Key to abbreviations

NDA = No Data Available