

## 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** • **Twin Jet Part 1**

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

**Relevant identified use(s)** • One component of a two-component polyurethane system

## 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**

- Compressed Gas - H280
- Skin Irritation 2 - H315
- Skin Sensitization 1 - H317
- Eye Irritation 2 - H319
- Acute Toxicity Inhalation 4 - H332
- Respiratory Sensitization 1 - H334
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
- Carcinogenicity 2 - H351
- Specific Target Organ Toxicity Repeated Exposure 1 - H372

## 2.2 Label Elements

**CLP**

**DANGER**

**Hazard statements** • H280 - Contains gas under pressure; may explode if heated  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation  
 H332 - Harmful if inhaled  
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H335 - May cause respiratory irritation  
 H351 - Suspected of causing cancer.  
 H372 - Causes 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 dust, fume, gas, mist, vapours and/or spray.  
 P264 - Wash thoroughly after handling.  
 P270 - Do not eat, drink or smoke when using this product.  
 P271 - Use only outdoors or in a well-ventilated area.  
 P272 - Contaminated work clothing should not be allowed out of the workplace.  
 P280 - Wear protective gloves/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.  
 P362+P364 - Take off contaminated clothing and wash it before reuse.  
 P321 - Specific treatment, see supplemental first aid information.  
 P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.  
 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.  
 P410 - Protect from sunlight.  
 P405 - Store locked up.  
 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**
- Compressed Gas
  - Skin Irritation 2
  - Skin Sensitization 1
  - Eye Irritation 2
  - Acute Toxicity Inhalation 4
  - Respiratory Sensitization 1
  - Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
  - Germ Cell Mutagenicity 2
  - Specific Target Organ Toxicity Repeated Exposure 1

## 2.2 Label elements

**OSHA HCS 2012**

**DANGER**



- Hazard statements** • Contains gas under pressure; may explode if heated  
 Causes skin irritation  
 May cause an allergic skin reaction  
 Causes serious eye irritation  
 Harmful if inhaled  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 May cause respiratory irritation  
 Suspected of causing genetic defects.  
 Causes 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 dust, fume, gas, mist, vapours, or spray.  
 Wash thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing should not be allowed out of the workplace.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 In case of inadequate ventilation wear respiratory protection.
- Response** • IF INHALED: Remove 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.  
 Take off contaminated clothing and wash before reuse.  
 Specific treatment, see supplemental first aid information.  
 If skin irritation or rash occurs: Get medical advice/attention.  
 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.  
 Protect from sunlight.  
 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 2015

### 2.1 Classification of the substance or mixture

#### WHMIS 2015

- Compressed Gas
- Skin Irritation 2
- Skin Sensitization 1
- Eye Irritation 2
- Acute Toxicity Inhalation 4
- Respiratory Sensitization 1
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
- Germ Cell Mutagenicity 2
- Specific Target Organ Toxicity Repeated Exposure 1

### 2.2 Label elements

#### WHMIS 2015

**DANGER**



- Hazard statements** • Contains gas under pressure; may explode if heated  
 Causes skin irritation  
 May cause an allergic skin reaction  
 Causes serious eye irritation  
 Harmful if inhaled  
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 May cause respiratory irritation  
 Suspected of causing genetic defects.  
 Causes 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 dust, fume, gas, mist, vapours and/or spray.  
 Wash thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing should not be allowed out of the workplace.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 In case of inadequate ventilation wear respiratory protection.

- Response** • IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.  
 IF ON SKIN: Wash with plenty of water.  
 Take off contaminated clothing and wash it before reuse.  
 Specific treatment, see supplemental first aid information.  
 If skin irritation or rash occurs: Get medical advice/attention.  
 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.  
 Store locked up.  
 Protect from sunlight.  
 Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## 2.3 Other hazards

### WHMIS 2015

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

## Section 3 - Composition/Information on Ingredients

### 3.1 Substances

- Material does not meet the criteria of a substance.

### 3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
			Ingestion/Oral-Rat LD50 • 49 g/kg		

Diphenylmethane Diisocyanate, Isomers and Homologues	<b>CAS:</b> 9016-87-9	> 50%	Inhalation-Rat LC50 • 490 mg/m <sup>3</sup> 4 Hour(s) Skin-Rabbit LD50 • >9400 mg/kg	<b>EU CLP:</b> Acute Tox. 2, H330; Eye Irrit. 2, H319 <b>OSHA HCS 2012:</b> Acute Tox. 2 (Inhl); Eye Irrit. 2 <b>WHMIS 2015:</b> Acute Tox. 2 (Inhl); Eye Irrit. 2	NDA
4,4'-Methylenediphenyl Diisocyanate	<b>CAS:</b> 101-68-8 <b>EC Number:</b> 202-966-0 <b>EU Index:</b> 615-005-00-9	25% TO 50%	Ingestion/Oral-Rat LD50 • 9200 mg/kg	<b>EU CLP:</b> Annex VI, Table 3.1: Acute Tox. 2, H330; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Resp. Sens. 1, H334; Skin Sens. 1, H317; Carc. 2, H351; STOT SE 3: Resp. Irrit., H335 (Inhl); STOT RE 1, H372 (Lungs / Inhl) <b>OSHA HCS 2012:</b> Acute Tox. 2 (Inhl); Skin Irrit. 2; Eye Irrit. 2; Resp. Sens. 1; Skin Sens. 1; Muta. 2 (Inhl); STOT SE 3: Resp. Irrit. (Inhl); STOT RE 1 (Lungs / Inhl) <b>WHMIS 2015:</b> Acute Tox. 2 (Inhl); Skin Irrit. 2; Eye Irrit. 2; Resp. Sens. 1; Skin Sens. 1; Muta. 2 (Inhl); STOT SE 3: Resp. Irrit. (Inhl); STOT RE 1 (Lungs / Inhl)	NDA
1,1,1,2-Tetrafluoroethane	<b>CAS:</b> 811-97-2 <b>EC Number:</b> 212-377-0	10% TO 25%	Inhalation-Rat LC50 • 1500 g/m <sup>3</sup> 4 Hour(s)	<b>EU CLP:</b> Press. Gas, H280 <b>OSHA HCS 2012:</b> Press. Gas; Simp. Asphyx. <b>WHMIS 2015:</b> Press. Gas; Simp. Asphyx.	NDA

## Section 4 - First Aid Measures

### 4.1 Description of first aid measures

#### Inhalation

- Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Get medical attention immediately.

#### Skin

- Wash skin with soap and water. 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

- Do NOT induce vomiting. If the subject is conscious, wash mouth and give 2 or more cups of milk or water. Never give anything by mouth to an unconscious person. 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** • Carbon dioxide, dry chemical, dry sand, foam, water spray.

**Unsuitable Extinguishing Media** • Do not use water jet.

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards** • Containers may explode when heated. Ruptured cylinders may rocket.

**Hazardous Combustion** • If present in a fire or explosion, potential decomposition byproducts include carbon

**Products**

monoxide, oxides of nitrogen, isocyanates, and hydrogen cyanide.

**5.3 Advice for firefighters**

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.  
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids. Wear positive pressure self-contained breathing apparatus (SCBA). Move containers from fire area if you can do it without risk.  
FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.  
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.  
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.  
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.  
FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.  
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

**Section 6 - Accidental Release Measures****6.1 Personal precautions, protective equipment and emergency procedures****Personal Precautions**

- Ventilate the area before entry. Do not walk through spilled material. Use appropriate Personal Protective Equipment (PPE) Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Emergency Procedures**

- Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile) As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.

**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.  
Allow substance to evaporate.  
Isolate area until gas has dispersed.  
If possible, turn leaking containers so that gas escapes rather than liquid.  
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.  
Do not direct water at spill or source of leak.  
Absorb spilled material with a sorbent such as sawdust or calcium silicate hydrate. When absorbed, transfer to an impervious container. Neutralize with solution of 8-10% sodium carbonate and 2% liquid detergent in water (10:1 ratio of solution to product). Do not seal container, as CO<sub>2</sub> will be released. Neutralize in a well-ventilated area for at least 48 hours before sealing containers for disposal.

**6.4 Reference to other sections**

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

**Section 7 - Handling and Storage****7.1 Precautions for safe handling****Handling**

- Use only with adequate ventilation. Use good safety and industrial hygiene practices. When handling the product, avoid contact with eyes, skin, and clothing, using protective equipment as needed. Do not breathe dust, fume, gas, mist, vapours, or

spray. Do not use this product around children, and secure it away from children. To prevent ingestion or contact following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing and protective equipment before entering eating/drinking areas. Containers should be kept tightly closed to prevent contact with moisture and other chemicals. Do not reuse empty containers for any purpose.

## 7.2 Conditions for safe storage, including any incompatibilities

### Storage

- Keep containers tightly sealed during storage. Store in a dry, well-ventilated area away from sources of ignition and incompatible materials (see Section #10). Protect from heat and direct sunlight. Recommended temperature for storage is 55-85°F. (12.8-29.4°C.).

### 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
4,4'-Methylenediphenyl Diisocyanate (101-68-8)	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	0.005 ppm TWA; 0.052 mg/m <sup>3</sup> TWA	0.005 ppm TWA; 0.05 mg/m <sup>3</sup> 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
Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9)	TWAs	Not established	Not established	0.005 ppm TWA; 0.07 mg/m <sup>3</sup> TWA	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Canada New Brunswick	Canada Northwest Territories	Canada Nova Scotia	Canada Nunavut	Canada Ontario
4,4'-Methylenediphenyl Diisocyanate (101-68-8)	TWAs	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.051 mg/m <sup>3</sup> TWA (listed under Methylene bisphenyl isocyanate)	0.005 ppm TWA	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate)	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))
			0.015 ppm STEL		0.015 ppm STEL	

	STELs	Not established	(listed under Methylene bisphenyl isocyanate)	Not established	(listed under Methylene bisphenyl isocyanate)	Not established
	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	China	Denmark
4,4'-Methylenediphenyl Diisocyanate (101-68-8)	STELs	Not established	Not established	Not established	0.1 mg/m <sup>3</sup> STEL	Not established
	TWAs	0.005 ppm TWAEV; 0.051 mg/m <sup>3</sup> TWAEV	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI))	Not established	0.05 mg/m <sup>3</sup> TWA	0.005 ppm TWA; 0.05 mg/m <sup>3</sup> TWA
	Ceilings	Not established	Not established	0.02 ppm Ceiling (listed under Methylene bisphenyl isocyanate (MDI)); 0.2 mg/m <sup>3</sup> Ceiling (listed under Methylene bisphenyl isocyanate (MDI))	Not established	Not established

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

	Result	Germany DFG	Germany TRGS	NIOSH	OSHA
1,1,1,2-Tetrafluoroethane (811-97-2)	TWAs	Not established	1000 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8); 4200 mg/m <sup>3</sup> TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8)	Not established	Not established
	Ceilings	8000 ppm Peak; 33600 mg/m <sup>3</sup> Peak	Not established	Not established	Not established
	MAKs	1000 ppm TWA MAK; 4200 mg/m <sup>3</sup> TWA MAK	Not established	Not established	Not established
4,4'-Methylenediphenyl Diisocyanate (101-68-8)	Ceilings	0.05 mg/m <sup>3</sup> Peak (can occur as vapor and aerosol at the same time, inhalable fraction)	Not established	0.020 ppm Ceiling (10 min); 0.2 mg/m <sup>3</sup> Ceiling (10 min)	0.02 ppm Ceiling; 0.2 mg/m <sup>3</sup> Ceiling
	TWAs	Not established	0.05 mg/m <sup>3</sup> TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed; sum of vapor	0.005 ppm TWA (listed under Methylene bisphenyl isocyanate); 0.05 mg/m <sup>3</sup> TWA	Not established



			and aerosol, ceiling factor 2, exposure factor 1)		
	MAKs	0.05 mg/m <sup>3</sup> TWA MAK (see also polymeric MDI; can occur as vapor and aerosol at the same time, inhalable fraction)	Not established	Not established	Not established
Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9)	TWAs	Not established	0.05 mg/m <sup>3</sup> TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed; AGW only for monomers, for oligomers and polymers see TRGS 430, inhalable fraction, as MDI, ceiling factor 2, exposure factor 1)	Not established	Not established
	Ceilings	0.05 mg/m <sup>3</sup> Peak ("polymeric MDI" (pMDI) is a technical grade MDI, containing 30%-80% w/w 4,4'-Methylene diphenyl isocyanate (MDI); the remainder consists of MDI oligomers and MDI homologues, inhalable fraction)	Not established	Not established	Not established
	MAKs	0.05 mg/m <sup>3</sup> TWA MAK ("polymeric MDI" (pMDI) is a technical grade MDI, containing 30%-80% w/w 4,4'-Methylene diphenyl isocyanate (MDI); the remainder consists of MDI oligomers and MDI homologues, inhalable fraction)	Not established	Not established	Not established

## Exposure Control Notations

### Canada Ontario

•4,4'-Methylenediphenyl Diisocyanate (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

•4,4'-Methylenediphenyl Diisocyanate (101-68-8): **Skin:** (skin notation)

•Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9): **Carcinogens:** (Category 2 (as inhalable aerosol, alveola fraction)) |

**Developmental Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable aerosol, alveoli fraction)) | **Reproductive Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable aerosol; alveola fraction)) | **Germ Cell Mutagens:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable aerosol, alveola fraction)) | **Skin:** (skin notation (calculated as MDI))

### Germany DFG

•4,4'-Methylenediphenyl Diisocyanate (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)

•Diphenylmethane Diisocyanate, Isomers and Homologues (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)

- 1,1,1,2-Tetrafluoroethane (811-97-2): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

## Exposure Limits Supplemental ACGIH

- 4,4'-Methylenediphenyl Diisocyanate (101-68-8): **TLV Basis - Critical Effects:** (respiratory sensitization (listed under Methylene bisphenyl isocyanate (MDI)))

## 8.2 Exposure controls

### Engineering Measures/Controls

- 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.

#### Eye/Face

- Wear safety glasses.

#### Skin/Body

- Wear appropriate gloves.

### Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

#### Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEL = Short Term Exposure Limits are based on 15-minute exposures

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

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

NIOSH = National Institute of Occupational Safety and Health

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

OSHA = Occupational Safety and Health Administration

TWAEV = Time-Weighted Average Exposure Value

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Aerosol	Appearance/Description	Cream-colored liquid with aromatic odor.
Color	Cream	Odor	Aromatic
Odor Threshold	Data lacking		
General Properties			
Boiling Point	Data lacking	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	= 1.23 Water=1	Water Solubility	Negligible < 0.1 %
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	5716 hPa	Vapor Density	Data lacking
Evaporation Rate	Data lacking	VOC (Wt.)	None
VOC (Vol.)	None		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Data lacking		
Environmental			

Octanol/Water Partition coefficient	Data lacking		
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## 9.2 Other Information

- No additional physical and chemical parameters noted.

## Section 10: Stability and Reactivity

### 10.1 Reactivity

- May react with water and incompatible materials.

### 10.2 Chemical stability

- Stable under normal temperatures and pressures.

### 10.3 Possibility of hazardous reactions

- Hazardous polymerization may occur at temperatures >392°F./200°C. .

### 10.4 Conditions to avoid

- Excess heat. Incompatible materials.

### 10.5 Incompatible materials

- Water, alcohols, acids, alkalis, and amines.

### 10.6 Hazardous decomposition products

- Carbon monoxide, carbon dioxide, nitrogen oxides, isocyanates, and hydrogen cyanide.

## Section 11 - Toxicological Information

### 11.1 Information on toxicological effects

		Components
4,4'-Methylenediphenyl Diisocyanate (25% TO 50%)	101-68-8	<p><b>Acute Toxicity:</b> 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 • 0.7 mg/m<sup>3</sup> 6 Hour(s); <i>Behavioral:Muscle contraction or spasticity; Sense Organs and Special Senses:Eye:Changes in extra-ocular muscles; Sense Organs and Special Senses:Eye:Other</i>; Inhalation-Rat TClO • 2.4 mg/m<sup>3</sup> 6 Hour(s); <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Other changes; Biochemical:Metabolism (intermediary):Other proteins;</i></p> <p><b>Irritation:</b> Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s);</p> <p><b>Multi-dose Toxicity:</b> Inhalation-Guinea Pig TClO • 2 mg/m<sup>3</sup> 3 Hour(s) 5 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Changes in lung weight;</i></p> <p><b>Mutagen:</b> DNA adduct • Inhalation-Rat • 0.002 mg/L 17 Hour(s) 1 Year(s); Micronucleus test • Inhalation-Rat • 7.1 mg/m<sup>3</sup> 3 Hour(s); DNA adduct • Inhalation-Rat • 2 mg/m<sup>3</sup> 52 Week(s)-Intermittent;</p> <p><b>Reproductive:</b> Inhalation-Rat TClO • 9 mg/m<sup>3</sup> 6 Hour(s)(6-15D preg); <i>Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system</i></p>
Diphenylmethane Diisocyanate, Isomers and Homologues (> 50%)	9016-87-9	<p><b>Acute Toxicity:</b> 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<sup>3</sup> 4 Hour(s); <i>Sense Organs and Special Senses:Eye:Other; Lungs, Thorax, or Respiration:Respiratory depression;</i></p> <p><b>Blood:Hemorrhage;</b> Skin-Rabbit LD50 • &gt;9400 mg/kg;</p> <p><b>Irritation:</b> Eye-Rabbit • 100 mg • Mild irritation;</p> <p><b>Reproductive:</b> Inhalation-Rat TClO • 12 mg/m<sup>3</sup> 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> <p><b>Tumorigen / Carcinogen:</b> Inhalation-Rat TClO • 6 mg/m<sup>3</sup> 6 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic:Equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration:Tumors</i></p>

1,1,1,2-Tetrafluoroethane (10% TO 25%)	811-97-2	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 1500 g/m <sup>3</sup> 4 Hour(s)
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GHS Properties	Classification
<b>Acute toxicity</b>	EU/CLP • Acute Toxicity - Inhalation 4 - ATEmix(inhl, dust/mist) = 0.46 mg/L 4h OSHA HCS 2012 • Acute Toxicity - Inhalation 4 - ATEmix(inhl, dust/mist) = 0.46 mg/L 4h WHMIS 2015 • Acute Toxicity - Inhalation 4 - ATEmix(inhl, dust/mist) = 0.46 mg/L 4h
<b>Skin corrosion/Irritation</b>	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2 WHMIS 2015 • Skin Irritation 2
<b>Serious eye damage/Irritation</b>	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2 WHMIS 2015 • Eye Irritation 2
<b>Skin sensitization</b>	EU/CLP • Skin Sensitizer 1 OSHA HCS 2012 • Skin Sensitizer 1 WHMIS 2015 • Skin Sensitizer 1
<b>Respiratory sensitization</b>	EU/CLP • Respiratory Sensitizer 1 OSHA HCS 2012 • Respiratory Sensitizer 1 WHMIS 2015 • Respiratory Sensitizer 1
<b>Aspiration Hazard</b>	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
<b>Carcinogenicity</b>	EU/CLP • Carcinogenicity 2; Suspected of causing cancer OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
<b>Germ Cell Mutagenicity</b>	EU/CLP • Data lacking OSHA HCS 2012 • Germ Cell Mutagenicity 2 WHMIS 2015 • Germ Cell Mutagenicity 2
<b>Toxicity for Reproduction</b>	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
<b>STOT-SE</b>	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 WHMIS 2015 • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
<b>STOT-RE</b>	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 1 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1 WHMIS 2015 • Specific Target Organ Toxicity Repeated Exposure 1

## 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. 4,4'-Methylenediphenyl Diisocyanate may cause effects on the lungs, resulting in impaired functions.

### 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)**
  - The product is nontoxic by ingestion, but ingestion may cause nausea, vomiting, and/or gastrointestinal irritation.
- Chronic (Delayed)**
  - No data available
- Mutagenic Effects**
  - Repeated and prolonged exposure may cause mutagenic effects.
- Carcinogenic Effects**
  - Repeated and prolonged exposure may cause cancer.

**Key to abbreviations**

LC = Lethal Concentration

LD = Lethal Dose

TC = Toxic Concentration

## Section 12 - Ecological Information

**12.1 Toxicity**

- Material data lacking.

**12.2 Persistence and degradability**

- Material data lacking.

**12.3 Bioaccumulative potential**

- Material data lacking.

**12.4 Mobility in Soil**

- Material data lacking.

**12.5 Results of PBT and vPvB assessment**

- No PBT and vPvB assessment has been conducted.

**12.6 Other adverse effects**

- No studies have been found.

## Section 13 - Disposal Considerations

**13.1 Waste treatment methods****Product waste**

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

**Packaging waste**

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

## Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards

<b>DOT</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	NDA
<b>TDG</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	NDA
<b>IMO/IMDG</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	NDA
<b>ADN</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	NDA
<b>ADR/RID</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	NDA
<b>IATA/ICAO</b>	UN3500	CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen)	2.2	Not relevant	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** • Pressure(Sudden Release of), Acute, Chronic

State Right To Know				
Component	CAS	MA	NJ	PA
1,1,1,2-Tetrafluoroethane	811-97-2	No	No	No
4,4'-Methylenediphenyl Diisocyanate	101-68-8	Yes	Yes	Yes
Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	No	Yes	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
1,1,1,2-Tetrafluoroethane	811-97-2	Yes	No	Yes	No	Yes
4,4'-Methylenediphenyl Diisocyanate	101-68-8	Yes	No	Yes	No	Yes
Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Yes	No	No	No	Yes

## Homologues

**Belgium****Labor****Belgium - Substances and Preparations - Carcinogens and Mutagens**

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

**Canada****Labor****Canada - WHMIS 1988 - Classifications of Substances**

• 1,1,1,2-Tetrafluoroethane	811-97-2	A
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	D1A, D2A, D2B
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	D1A, D2A, D2B

**Canada - WHMIS 1988 - Ingredient Disclosure List**

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	0.1 %
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

**Environment****Canada - CEPA - Priority Substances List**

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

**Denmark****Environment****Denmark - List of Undesirable Substances - Product Groups/Function**

• 1,1,1,2-Tetrafluoroethane	811-97-2	Spray canisters (listed under Fluorinated greenhouse gases); Refrigeration systems (listed under Fluorinated greenhouse gases); Insulating foam (listed under Fluorinated
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• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	greenhouse gases) Binders; Curing agents; Adhesives; Paints; Coatings; Molding compounds
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## Europe

### Other

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Xn; R20-48/20 Xi; R36/37/38 Carc.Cat.3; R40 R42/43
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	5%≤C: Xi; R:36/37/38 0.1% ≤C: R:42
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Xn R:20-36/37/38-40-42/43- 48/20 S:(1/2)-23-36/37-45
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	C, 2
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	S:(1/2)-23-36/37-45
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## Germany

### Labor

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

#### Germany - Immission Control - Qualifying Quantities for Safety Reporting

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

#### Germany - TRGS 505 - Specific Lead Regulations

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

#### Germany - TRGS 511 - Specific Ammonium Nitrate Regulations

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
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• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## Environment

### Germany - TA Luft - Types and Classes

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	organic [5.2.5], Class I
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - TA Luft - Emission Limits for Carcinogenic Substances

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - TA Luft - Emission Limits for Fibers

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - TA Luft - Emission Limits for Inorganic Dusts

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - TA Luft - Emission Limits for Inorganic Gases

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - TA Luft - Emission Limits for Organic Substances

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	0.10 kg/h Mass flow (Class I); 20 mg/m <sup>3</sup> Mass concentration (Class I)
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - Water Classification (VwVwS) - Annex 1

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	ID Number 635, hazard class 1 - low hazard to waters
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

### Germany - Water Classification (VwVwS) - Annex 3

• 1,1,1,2-Tetrafluoroethane	811-97-2	ID Number 2350, hazard class 1 - low hazard to waters
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	ID Number 9393, hazard class 1 - low hazard to waters

## United States

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

**U.S. - OSHA - Specifically Regulated Chemicals**

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	(listed under Methylene diphenyl diisocyanate)
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	5000 lb final RQ; 2270 kg final RQ
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates, under Methylenebis (phenylisocyanate))
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## United States - California

### Environment

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## United States - Pennsylvania

### Labor

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

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

• 1,1,1,2-Tetrafluoroethane	811-97-2	Not Listed
• 4,4'-Methylenediphenyl Diisocyanate	101-68-8	Not Listed
• Diphenylmethane Diisocyanate, Isomers and Homologues	9016-87-9	Not Listed

## 15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

## Section 16 - Other Information

<b>Revision Date</b>	• 30/January/2018
<b>Preparation Date</b>	• 14/December/2017

**Other Information**

**Disclaimer/Statement of Liability**

- Changes to this revision: Section 2: Updates to classifications and corresponding label information for all agencies.
- The information contained herein is based on data considered accurate which has been obtained from other companies and organizations. However, no warranty or representation is expressed or implied that the information, is accurate, complete or representative. Firestone Building Products Company, LLC assumes no responsibility for injury to the buyer, the buyer's employees, or any third persons, if reasonable safety procedures are not followed. Additionally, Firestone Building Products Company, LLC assumes no responsibility for injury to buyer, the buyer's employees, or any third persons caused by abnormal use of this material, even if reasonable safety procedures are followed.

**Key to abbreviations**

NDA = No Data Available