Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the Canadian Hazardous Products Regulations.

SECTION 1: Identification

1.1. Product identifier
3M™ All Purpose Sealant Primer P591

Product Identification Numbers
70-0075-1219-0 70-0075-1245-5 70-0075-1716-5 UU-0092-7315-0 UU-0092-7316-8
UU-0093-0489-8 XF-6001-4058-6

1.2. Recommended use and restrictions on use

Intended Use
Industrial use

Specific Use
Primer

Restrictions on use
Not applicable

1.3. Supplier's details

Company:	3M Canada Company
Division:	Industrial Adhesives and Tapes Division
Address:	1840 Oxford Street East, Post Office Box 5757, London, Ontario N6A 4T1
Telephone:	(800) 364-3577
Website:	www.3M.ca

1.4. Emergency telephone number
Medical Emergency Telephone:1-800-3M HELPS / 1800 364 3577

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
Flammable Liquid: Category 2.
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 2A.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1A.

Carcinogenicity: Category 2.
Reproductive Toxicity: Category 2.
Specific Target Organ Toxicity (repeated exposure): Category 1.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Flame |Exclamation mark |Health Hazard |

Pictograms



Hazard Statements
Highly flammable liquid and vapour.
Causes skin irritation. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause respiratory irritation.

Causes damage to organs through prolonged or repeated exposure: respiratory system.

Precautionary statements

Prevention:
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe vapours. Wash exposed skin 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, eye protection, and face protection. In case of inadequate ventilation wear respiratory protection.

Response:
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. Get medical attention if you feel unwell. If eye irritation persists or if skin irritation or rash occurs: Get medical attention. If experiencing respiratory symptoms: Call a POISON CENTER or doctor. Take off contaminated clothing and wash it before reuse. In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

Storage:
Store in a well-ventilated place. Keep cool. Store locked up.

Disposal:
Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

2.3. Other hazards
None known.

3% of the mixture consists of ingredients of unknown acute oral toxicity.
3% of the mixture consists of ingredients of unknown acute dermal toxicity.
9% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt	Common Name
Methyl Ethyl Ketone	78-93-3	45 - 70 Trade Secret *	2-Butanone
N-Butyl Acetate	123-86-4	7 - 13 Trade Secret *	Acetic acid, butyl ester
Polymethylene Polyphenylene Isocyanate	9016-87-9	3 - 10 Trade Secret *	Isocyanic acid, polymethylenepolyphenylene ester
Aromatic-alphatic polyisocyanate	26426-91-5	3 - 7 Trade Secret *	Benzene, 2,4-diisocyanato-1-methyl-, polymer with 1,6-diisocyanatohexane
Carbon Black	1333-86-4	3 - 7 Trade Secret *	Carbon black
p,p'-Methylenebis(phenyl isocyanate)	101-68-8	1 - 5 Trade Secret *	Benzene, 1,1'-methylenebis[4-isocyanato-
1-methoxy-2-propyl acetate	108-65-6	1 - 5	2-Propanol, 1-methoxy-, acetate
2,4′-Methylenebis(phenyl isocyanate)	5873-54-1	1 - 5 Trade Secret *	Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-
3-(trimethoxysilyl)propyl glycidyl ether	2530-83-8	1 - 5 Trade Secret *	Silane, trimethoxy[3-(oxiranylmethoxy)propyl]-
Alkyl Isocyanate Silane	Trade Secret	1 - 5	Not Applicable
Polyurethane resin	Trade Secret	1 - 5	Not Applicable
Hexamethylene diisocyanate polymer	28182-81-2	1 - 5 Trade Secret *	Hexane, 1,6-diisocyanato-, homopolymer
p-Toluenesulfonamide	70-55-3	0.5 - 1.5	Benzenesulfonamide, 4-methyl-
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	68299-15-0	0.1 - 1 Trade Secret *	No Data Available
Toluene 2,4-diisocyanate	584-84-9	< 0.1	Benzene, 2,4-diisocyanato-1-methyl-
p-Toluenesulfonyl chloride	98-59-9	< 0.1	Benzenesulfonyl chloride, 4-methyl-
Hexamethylene diisocyanate	822-06-0	< 0.1	Hexane, 1,6-diisocyanato-

Polyurethane resin is a non-hazardous material according to WHMIS criteria. Specific information has been withheld as a trade secret.
Alkyl Isocyanate Silane is a non-hazardous material according to WHMIS criteria. Specific information has been withheld as a trade secret.

*The concentration (exact or range) of this component has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Irritating to the respiratory tract (coughing, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain). Allergic respiratory reaction (difficulty breathing, wheezing, cough, and tightness of chest). Allergic skin reaction (redness, swelling, blistering, and itching). Central nervous system depression (headache, dizziness, drowsiness, incoordination, nausea, slurred speech, giddiness, and unconsciousness). Target organ effects following prolonged or repeated exposure. See Section 11 for additional details.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

5.2. Unsuitable extinguishing media
None Determined

5.3. Special hazards arising from the substance or mixture
Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Decomposition or By-Products

Substance	Condition
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Cyanide	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	During Combustion

5.4. Special protection actions for fire-fighters
Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapours in the spill area to burn or explode. Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical and health hazards, refer to sections 2 and 11 of the SDS.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up

Contain spill. Cover spill area with a fire-extinguishing foam. Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible using non-sparking tools. Place in a metal container approved for transportation by appropriate authorities. Cover, but do not seal for 48 hours. Clean up residue with detergent and water. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

For industrial or professional use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Wear low static or properly grounded shoes. Use personal protective equipment (gloves, respirators, etc.) as required. To minimize the risk of ignition, determine applicable electrical classifications for the process using this product and select specific local exhaust ventilation equipment to avoid flammable vapor accumulation. Ground/bond container and receiving equipment if there is potential for static electricity accumulation during transfer.

7.2. Conditions for safe storage including any incompatibilities

Store in a well-ventilated place. Keep cool. Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidizing agents. Store away from amines. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Methylene bisphenyl isocyanate (MDI)	101-68-8	ACGIH	TWA:0.005 ppm	
1-methoxy-2-propyl acetate	108-65-6	AIHA	TWA:50 ppm	
Butyl acetates, all isomers	123-86-4	ACGIH	TWA:50 ppm;STEL:150 ppm	
Carbon Black	1333-86-4	ACGIH	TWA(inhalable fraction):3 mg/m3	
Methylene bisphenyl isocyanate (MDI)	5873-54-1	ACGIH	TWA:0.005 ppm	
Tin, organic compounds, as Sn	68299-15-0	ACGIH	TWA(as Sn):0.1 mg/m3;STEL(as Sn):0.2 mg/m3	Danger of cutaneous absorption
Methyl Ethyl Ketone	78-93-3	ACGIH	TWA:75 ppm;STEL:150 ppm	Danger of cutaneous absorption
Hexamethylene diisocyanate	822-06-0	ACGIH	TWA:0.005 ppm	
Methylene bisphenyl isocyanate (MDI)	9016-87-9	ACGIH	TWA:0.005 ppm	

p-Toluenesulfonyl chloride	98-59-9	AIHA	CEIL:5 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment. Use explosion-proof ventilation equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Safety Glasses with side shields
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.

Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (e.g., spraying, high splash potential, etc.), then use of a protective apron may be necessary. See recommended glove material(s) for determining appropriate apron material(s). If a glove material is not available as an apron, polymer laminate is a suitable option.

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapours and particulates
Half facepiece or full facepiece supplied-air respirator

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Colour	Black
Odour	Strong Ketones
Odour threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*Not Applicable*

Boiling point	79 ºC
Flash Point	-8 ºC [*Test Method:*Closed Cup]
Evaporation rate	*No Data Available*
Flammability	Flammable Liquid: Category 2.
Flammable Limits(LEL)	1.8 % volume
Flammable Limits(UEL)	11.5 % volume
Vapour Pressure	*No Data Available*
Relative Vapour Density	2.8 [*Ref Std:*AIR=1]
Density	0.9 g/ml
Relative density	0.9 [*Ref Std:*WATER=1]
Water solubility	Moderate
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	> 200 ºC
Decomposition temperature	*No Data Available*
Kinematic Viscosity	11.1 mm2/sec
Volatile Organic Compounds	*No Data Available*
Percent volatile	*No Data Available*
VOC Less H2O & Exempt Solvents	<=592 g/l [*Test Method:*calculated SCAQMD rule 443.1]

Particle Characteristics	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Sparks and/or flames
Heat

10.5. Incompatible materials
Alcohols
Amines
Strong acids
Strong bases
Strong oxidizing agents
Water

10.6. Hazardous decomposition products

Substance	**Condition**
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Allergic Respiratory Reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest. May cause additional health effects (see below).

Skin Contact:
Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Prolonged or repeated exposure may cause target organ effects:
Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish coloured skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
Soot (as found in occupational exposure of chimney sweeps)	1333-86-4	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
Soots	1333-86-4	Known To Be Human Carcinogen.	National Toxicology Program Carcinogens
Carbon black	1333-86-4	Grp. 2B: Possible human carc.	International Agency for Research on Cancer
Toluene diisocyanates	584-84-9	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Additional Information:
Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or

the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE >5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Methyl Ethyl Ketone	Dermal	Rabbit	LD50 > 8,050 mg/kg
Methyl Ethyl Ketone	Inhalation-Vapor (4 hours)	Rat	LC50 34.5 mg/l
Methyl Ethyl Ketone	Ingestion	Rat	LD50 2,737 mg/kg
N-Butyl Acetate	Dermal	Rabbit	LD50 > 14,112 mg/kg
N-Butyl Acetate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 1.8 mg/l
N-Butyl Acetate	Inhalation-Vapor (4 hours)	Rat	LC50 > 21 mg/l
N-Butyl Acetate	Ingestion	Rat	LD50 > 10,760 mg/kg
Polymethylene Polyphenylene Isocyanate	Dermal	Rabbit	LD50 > 5,000 mg/kg
Polymethylene Polyphenylene Isocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
Polymethylene Polyphenylene Isocyanate	Ingestion	Rat	LD50 31,600 mg/kg
Aromatic-alphatic polyisocyanate	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Aromatic-alphatic polyisocyanate	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 > 3.003 mg/l
Aromatic-alphatic polyisocyanate	Ingestion	similar compounds	LD50 > 5,000 mg/kg
Carbon Black	Dermal	Rabbit	LD50 > 3,000 mg/kg
Carbon Black	Ingestion	Rat	LD50 > 8,000 mg/kg
2,4′-Methylenebis(phenyl isocyanate)	Dermal	Rabbit	LD50 > 5,000 mg/kg
p,p'-Methylenebis(phenyl isocyanate)	Dermal	Rabbit	LD50 > 5,000 mg/kg
2,4′-Methylenebis(phenyl isocyanate)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
2,4′-Methylenebis(phenyl isocyanate)	Ingestion	Rat	LD50 31,600 mg/kg
p,p'-Methylenebis(phenyl isocyanate)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
p,p'-Methylenebis(phenyl isocyanate)	Ingestion	Rat	LD50 31,600 mg/kg
3-(trimethoxysilyl)propyl glycidyl ether	Dermal	Rabbit	LD50 4,000 mg/kg
3-(trimethoxysilyl)propyl glycidyl ether	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.3 mg/l
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	Rat	LD50 7,010 mg/kg
Hexamethylene diisocyanate polymer	Inhalation-Dust/Mist (4 hours)	Professional judgement	LC50 estimated to be 1 - 5 mg/l
Hexamethylene diisocyanate polymer	Dermal	Rabbit	LD50 > 5,000 mg/kg
Hexamethylene diisocyanate polymer	Ingestion	Rat	LD50 > 5,000 mg/kg
p-Toluenesulfonamide	Dermal	Rat	LD50 > 2,000 mg/kg
p-Toluenesulfonamide	Ingestion	Rat	LD50 > 2,000 mg/kg
1-methoxy-2-propyl acetate	Dermal	Rabbit	LD50 > 5,000 mg/kg
1-methoxy-2-propyl acetate	Inhalation-Vapor (4 hours)	Rat	LC50 > 28.8 mg/l
1-methoxy-2-propyl acetate	Ingestion	Rat	LD50 8,532 mg/kg

Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	Ingestion	Rat	LD50 > 2,000 mg/kg
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	Dermal	similar compounds	LD50 > 2,000 mg/kg
Hexamethylene diisocyanate	Dermal	Rat	LD50 > 7,000 mg/kg
Hexamethylene diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Inhalation-Vapor (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Ingestion	Rat	LD50 746 mg/kg
Toluene 2,4-diisocyanate	Inhalation-Vapor (4 hours)	Mouse	LC50 0.12 mg/l
Toluene 2,4-diisocyanate	Dermal	Rabbit	LD50 > 9,400 mg/kg
Toluene 2,4-diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.35 mg/l
Toluene 2,4-diisocyanate	Ingestion	Rat	LD50 > 5,000 mg/kg
p-Toluenesulfonyl chloride	Dermal	Rabbit	LD50 estimated to be > 5,000 mg/kg
p-Toluenesulfonyl chloride	Ingestion	Rat	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Methyl Ethyl Ketone	Rabbit	Minimal irritation
N-Butyl Acetate	Rabbit	No significant irritation
Polymethylene Polyphenylene Isocyanate	official classification	Irritant
Aromatic-alphatic polyisocyanate	similar compounds	No significant irritation
Carbon Black	Rabbit	No significant irritation
2,4′-Methylenebis(phenyl isocyanate)	official classification	Irritant
p,p'-Methylenebis(phenyl isocyanate)	official classification	Irritant
3-(trimethoxysilyl)propyl glycidyl ether	Rabbit	Mild irritant
Hexamethylene diisocyanate polymer	Rabbit	Minimal irritation
p-Toluenesulfonamide	Rabbit	No significant irritation
1-methoxy-2-propyl acetate	Rabbit	No significant irritation
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	similar compounds	No significant irritation
Hexamethylene diisocyanate	Rabbit	Corrosive
Toluene 2,4-diisocyanate	Rabbit	Irritant
p-Toluenesulfonyl chloride	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Methyl Ethyl Ketone	Rabbit	Severe irritant
N-Butyl Acetate	Human	Mild irritant
Polymethylene Polyphenylene Isocyanate	Rabbit	Severe irritant
Aromatic-alphatic polyisocyanate	similar compounds	Severe irritant
Carbon Black	Rabbit	No significant irritation
2,4′-Methylenebis(phenyl isocyanate)	Rabbit	Severe irritant
p,p'-Methylenebis(phenyl isocyanate)	Rabbit	Severe irritant

3-(trimethoxysilyl)propyl glycidyl ether	Rabbit	Corrosive
Hexamethylene diisocyanate polymer	Rabbit	Mild irritant
p-Toluenesulfonamide	Rabbit	No significant irritation
1-methoxy-2-propyl acetate	Rabbit	Mild irritant
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	In vitro data	No significant irritation
Hexamethylene diisocyanate	Rabbit	Corrosive
Toluene 2,4-diisocyanate	Rabbit	Corrosive
p-Toluenesulfonyl chloride	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
N-Butyl Acetate	Multiple animal species	Not classified
Polymethylene Polyphenylene Isocyanate	Mouse	Sensitizing
Aromatic-alphatic polyisocyanate	similar compounds	Sensitizing
2,4′-Methylenebis(phenyl isocyanate)	Mouse	Sensitizing
p,p'-Methylenebis(phenyl isocyanate)	Mouse	Sensitizing
3-(trimethoxysilyl)propyl glycidyl ether	Guinea pig	Not classified
Hexamethylene diisocyanate polymer	Guinea pig	Sensitizing
1-methoxy-2-propyl acetate	Guinea pig	Not classified
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	similar compounds	Not classified
Hexamethylene diisocyanate	Multiple animal species	Sensitizing
Toluene 2,4-diisocyanate	Human and animal	Sensitizing
p-Toluenesulfonyl chloride	Mouse	Sensitizing

Respiratory Sensitization

Name	Species	Value
Polymethylene Polyphenylene Isocyanate	Human	Sensitizing
2,4′-Methylenebis(phenyl isocyanate)	Human	Sensitizing
p,p'-Methylenebis(phenyl isocyanate)	Human	Sensitizing
Hexamethylene diisocyanate polymer	similar compounds	Not classified
Hexamethylene diisocyanate	Human and animal	Sensitizing
Toluene 2,4-diisocyanate	Human	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
Methyl Ethyl Ketone	In Vitro	Not mutagenic
N-Butyl Acetate	In Vitro	Not mutagenic
Polymethylene Polyphenylene Isocyanate	In vivo	Not mutagenic
Polymethylene Polyphenylene Isocyanate	In Vitro	Some positive data exist, but the data are not sufficient for classification
Aromatic-alphatic polyisocyanate	In Vitro	Not mutagenic
Carbon Black	In Vitro	Not mutagenic
Carbon Black	In vivo	Some positive data exist, but the data are not sufficient for classification

2,4′-Methylenebis(phenyl isocyanate)	In vivo	Not mutagenic
2,4′-Methylenebis(phenyl isocyanate)	In Vitro	Some positive data exist, but the data are not sufficient for classification
p,p'-Methylenebis(phenyl isocyanate)	In vivo	Not mutagenic
p,p'-Methylenebis(phenyl isocyanate)	In Vitro	Some positive data exist, but the data are not sufficient for classification
3-(trimethoxysilyl)propyl glycidyl ether	In Vitro	Some positive data exist, but the data are not sufficient for classification
3-(trimethoxysilyl)propyl glycidyl ether	In vivo	Some positive data exist, but the data are not sufficient for classification
Hexamethylene diisocyanate polymer	In Vitro	Not mutagenic
Hexamethylene diisocyanate polymer	In vivo	Not mutagenic
1-methoxy-2-propyl acetate	In Vitro	Not mutagenic
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	In Vitro	Not mutagenic
Hexamethylene diisocyanate	In Vitro	Not mutagenic
Hexamethylene diisocyanate	In vivo	Not mutagenic
Toluene 2,4-diisocyanate	In Vitro	Some positive data exist, but the data are not sufficient for classification
p-Toluenesulfonyl chloride	In vivo	Not mutagenic
p-Toluenesulfonyl chloride	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Methyl Ethyl Ketone	Inhalation	Human	Not carcinogenic
Polymethylene Polyphenylene Isocyanate	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
Carbon Black	Dermal	Mouse	Not carcinogenic
Carbon Black	Ingestion	Mouse	Not carcinogenic
Carbon Black	Inhalation	Rat	Carcinogenic
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
3-(trimethoxysilyl)propyl glycidyl ether	Dermal	Mouse	Not carcinogenic
Hexamethylene diisocyanate	Inhalation	Rat	Not carcinogenic
Toluene 2,4-diisocyanate	Inhalation	Human and animal	Not carcinogenic
Toluene 2,4-diisocyanate	Ingestion	Multiple animal species	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Methyl Ethyl Ketone	Inhalation	Not classified for development	Rat	LOAEL 8.8 mg/l	during gestation
N-Butyl Acetate	Inhalation	Not classified for female reproduction	Rat	NOAEL 9.5 mg/l	2 generation
N-Butyl Acetate	Inhalation	Not classified for male reproduction	Rat	NOAEL 9.5 mg/l	2 generation
N-Butyl Acetate	Inhalation	Not classified for development	Rat	NOAEL 3.6 mg/l	2 generation
Polymethylene Polyphenylene Isocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation
Polymethylene Polyphenylene Isocyanate	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation

2,4′-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	1 generation
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	1 generation
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	Not classified for development	Rat	NOAEL 3,000 mg/kg/day	during organogenesis
p-Toluenesulfonamide	Ingestion	Not classified for reproduction and/or development	Rat	NOAEL 300 mg/kg/day	premating & during gestation
1-methoxy-2-propyl acetate	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation
1-methoxy-2-propyl acetate	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation
1-methoxy-2-propyl acetate	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation
1-methoxy-2-propyl acetate	Inhalation	Not classified for development	Rat	NOAEL 21.6 mg/l	during organogenesis
Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	Ingestion	Toxic to development	similar compounds	NOAEL not available	
Hexamethylene diisocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.014 mg/l	4 weeks
Toluene 2,4-diisocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.002 mg/l	2 generation
Toluene 2,4-diisocyanate	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.002 mg/l	2 generation
Toluene 2,4-diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
p-Toluenesulfonyl chloride	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	premating into lactation
p-Toluenesulfonyl chloride	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	premating into lactation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Methyl Ethyl Ketone	Inhalation	central nervous system depression	May cause drowsiness or dizziness	official classification	NOAEL Not available	
Methyl Ethyl Ketone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for	Human	NOAEL Not available	

			classification			
Methyl Ethyl Ketone	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Methyl Ethyl Ketone	Ingestion	liver	Not classified	Rat	NOAEL Not available	not applicable
Methyl Ethyl Ketone	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 1,080 mg/kg	not applicable
N-Butyl Acetate	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	not available
N-Butyl Acetate	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	not available
N-Butyl Acetate	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Polymethylene Polyphenylene Isocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Hexamethylene diisocyanate polymer	Inhalation	respiratory irritation	May cause respiratory irritation		NOAEL Not available	
1-methoxy-2-propyl acetate	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
1-methoxy-2-propyl acetate	Ingestion	central nervous system depression	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL not available	
Hexamethylene diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Human	NOAEL Not available	occupational exposure
Toluene 2,4-diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	occupational exposure
p-Toluenesulfonyl chloride	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Methyl Ethyl Ketone	Dermal	nervous system	Not classified	Guinea pig	NOAEL Not available	31 weeks
Methyl Ethyl Ketone	Inhalation	liver	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	heart	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	endocrine system	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	immune system	Not classified	Rat	NOAEL 14.7 mg/l	90 days
Methyl Ethyl Ketone	Inhalation	muscles	Not classified	Rat	NOAEL 14.7	90 days

					mg/l	
Methyl Ethyl Ketone	Ingestion	liver	Not classified	Rat	NOAEL Not available	7 days
Methyl Ethyl Ketone	Ingestion	nervous system	Not classified	Rat	NOAEL 173 mg/kg/day	90 days
N-Butyl Acetate	Inhalation	endocrine system	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	liver	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	nervous system	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 4.8 mg/l	13 weeks
N-Butyl Acetate	Inhalation	respiratory system	Not classified	Rat	NOAEL 4.8 mg/l	13 weeks
N-Butyl Acetate	Inhalation	heart	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	immune system	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	eyes	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
N-Butyl Acetate	Inhalation	vascular system	Not classified	Rat	NOAEL 9.6 mg/l	13 weeks
Polymethylene Polyphenylene Isocyanate	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
Polymethylene Polyphenylene Isocyanate	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
Polymethylene Polyphenylene Isocyanate	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
Polymethylene Polyphenylene Isocyanate	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
Polymethylene Polyphenylene Isocyanate	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
Carbon Black	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
2,4′-Methylenebis(phenyl isocyanate)	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days

2,4′-Methylenebis(phenyl isocyanate)	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
2,4′-Methylenebis(phenyl isocyanate)	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
p,p'-Methylenebis(phenyl isocyanate)	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
p,p'-Methylenebis(phenyl isocyanate)	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
p,p'-Methylenebis(phenyl isocyanate)	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	heart	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	immune system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
3-(trimethoxysilyl)propyl glycidyl ether	Ingestion	respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Hexamethylene diisocyanate polymer	Inhalation	immune system	Not classified	Rat	NOAEL 0.084 mg/l	2 weeks
Hexamethylene diisocyanate polymer	Inhalation	blood	Not classified	Rat	NOAEL 0.084 mg/l	2 weeks
1-methoxy-2-propyl acetate	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 16.2 mg/l	9 days
1-methoxy-2-propyl acetate	Inhalation	olfactory system	Not classified	Mouse	LOAEL 1.62 mg/l	9 days
1-methoxy-2-propyl acetate	Inhalation	blood	Not classified	Multiple animal species	NOAEL 16.2 mg/l	9 days
1-methoxy-2-propyl acetate	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	44 days

Stannane, dioctylbis[(1-oxoneodecyl)oxy]-	Ingestion	immune system	Causes damage to organs through prolonged or repeated exposure	similar compounds	NOAEL not available	
Hexamethylene diisocyanate	Inhalation	liver	Not classified	Rat	NOAEL 0.002 mg/l	3 weeks
Hexamethylene diisocyanate	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 0.002 mg/l	3 weeks
Hexamethylene diisocyanate	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.0014 mg/l	4 weeks
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Rat	NOAEL 0.0012 mg/l	2 years
Hexamethylene diisocyanate	Inhalation	nervous system	Not classified	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	heart	Not classified	Rat	NOAEL 0.001 mg/l	90 days
Toluene 2,4-diisocyanate	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL 0 mg/l	occupational exposure
p-Toluenesulfonyl chloride	Ingestion	gastrointestinal tract	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	heart	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	endocrine system	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	nervous system	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	liver	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	immune system	Not classified	Rat	NOAEL 750 mg/kg/day	34 days
p-Toluenesulfonyl chloride	Ingestion	respiratory system	Not classified	Rat	NOAEL 750 mg/kg/day	34 days

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

No data available.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Incinerate in a permitted waste incineration facility. As a disposal alternative, utilize an acceptable permitted waste disposal facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

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

Global inventory status

Contact 3M for more information. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

SECTION 16: Other information

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.
Health: 2 **Flammability:** 3 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

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