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™ Process Color 882N Traffic Sign Red

Product Identification Numbers
42-0021-9012-4 75-0301-3625-5 XM-0038-9418-0

1.2. Recommended use and restrictions on use

Intended Use
Ink

Restrictions on use
Not applicable

1.3. Supplier's details

Company:	3M Canada Company
Division:	Commercial Branding and Transportation 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 3.
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 1.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1A.
Carcinogenicity: Category 1A.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (repeated exposure): Category 2.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Flame |Corrosion |Exclamation mark |Health Hazard |

Pictograms


Hazard Statements
Flammable liquid and vapour.
Causes skin irritation. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause cancer. May damage fertility or the unborn child. May cause drowsiness or dizziness.

May cause 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. 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, face protection, and if needed, respiratory protection (see SDS Section 8). 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. Immediately call a POISON CENTER or doctor. Get medical attention if you feel unwell. 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.

19% of the mixture consists of ingredients of unknown acute oral toxicity.
19% of the mixture consists of ingredients of unknown acute dermal toxicity.
31% 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
2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	28262-63-7	10 - 30	2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
Acrylic polymers	Trade Secret	10 - 30	Not Applicable
Heavy aromatic solvent naphtha (petroleum)	64742-94-5	10 - 30 Trade Secret *	Solvent naphtha, petroleum, heavy arom.aromatic streams. It consists predominantly of aromatic hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 165.degree.C to 290.degree.C (330.degr
Pine oil	8002-09-3	7 - 13 Trade Secret *	Oils, pine
1-Methoxy-2-propyl acetate	108-65-6	3 - 7	2-Propanol, 1-methoxy-, acetate
Cyclohexanone	108-94-1	3 - 7 Trade Secret *	Cyclohexanone
Light aromatic solvent naphtha (petroleum)	64742-95-6	1 - 5 Trade Secret *	Solvent naphtha (petroleum), light arom.
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	5521-31-3	0.5 - 5 Trade Secret *	Anthra[2,1,9-def:6,5,10-d'e'f']diisoquinoline-1,3,8,10(2H,9H)-tetrone, 2,9-dimethyl-
Vinyl polymer	Trade Secret	1 - 5	Not Applicable
Organic pigment	Trade Secret	< 2	Not Applicable
1,2,4-Trimethylbenzene	95-63-6	0.5 - 1.5 Trade Secret *	Benzene, 1,2,4-trimethyl-
Cumene	98-82-8	0.1 - 1 Trade Secret *	Benzene, (1-methylethyl)-
Glycolic acid, butyl ester	7397-62-8	0.1 - 1 Trade Secret *	Acetic acid, hydroxy-, butyl ester
Xylene	1330-20-7	0.1 - 1 Trade Secret *	Dimethylbenzene
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	79720-19-7	< 0.7	2,5-Pyrrolidinedione, 3-dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl)-
d-Limonene	5989-27-5	< 0.5	Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-
Ethylbenzene	100-41-4	< 0.3	Benzene, ethyl-
Naphthalene	91-20-3	< 0.3	Naphthalene
n-Butyl methacrylate	97-88-1	< 0.3	2-Propenoic acid, 2-methyl-, butyl ester
2,3-Epoxypropyl neodecanoate	26761-45-5	< 0.2	Neodecanoic acid, oxiranylmethyl ester
Naphthenic Acid	1338-24-5	< 0.2	Naphthenic acids
Nickel salts of naphthenic acids	61788-71-4	< 0.2	Naphthenic acids, nickel salts
Toluene	108-88-3	< 0.2	No Data Available

Organic pigment is a non-hazardous material according to WHMIS criteria. Specific information has been withheld as a trade secret.
Acrylic polymers is a non-hazardous material according to WHMIS criteria. Specific information has been withheld as a trade secret.
Vinyl polymer 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 for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately 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

Allergic respiratory reaction (difficulty breathing, wheezing, cough, and tightness of chest). Allergic skin reaction (redness, swelling, blistering, and itching). Serious damage to the eyes (corneal cloudiness, severe pain, tearing, ulcerations, and significantly impaired or loss of vision). 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. Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products

Substance	Condition
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Chloride	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 that is resistant to polar solvents. 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. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. 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
Do not breathe thermal decomposition products. 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. Store away from acids. Store away from oxidizing agents. 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
Ethylbenzene	100-41-4	ACGIH	TWA:20 ppm	
1-Methoxy-2-propyl acetate	108-65-6	AIHA	TWA:50 ppm	
Toluene	108-88-3	ACGIH	TWA:20 ppm	
Cyclohexanone	108-94-1	ACGIH	TWA:20 ppm;STEL:50 ppm	Danger of cutaneous

				absorption
Xylene	1330-20-7	ACGIH	TWA:20 ppm	
d-Limonene	5989-27-5	AIHA	TWA:165.5 mg/m3(30 ppm)	
Naphthalene	91-20-3	ACGIH	TWA:10 ppm	Danger of cutaneous absorption
1,2,4-Trimethylbenzene	95-63-6	ACGIH	TWA:10 ppm	
Cumene	98-82-8	ACGIH	TWA:5 ppm	

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
For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. 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:
Full Face Shield
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:
For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.
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	Red
Odour	Moderate Solvent
Odour threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*Not Applicable*
Boiling point	>=140 ºC
Flash Point	52.2 ºC [*Test Method:*Closed Cup]
Evaporation rate	<=0.05 [*Ref Std:*BUOAC=1]
Flammability	Flammable Liquid: Category 3.
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapour Pressure	<=3.7 mmHg [@ 68 ºF]
Relative Vapour Density	*No Data Available*
Density	0.99 g/ml
Relative density	0.99 [*Ref Std:*WATER=1]
Water solubility	*No Data Available*
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Kinematic Viscosity	1,196 mm2/sec
Volatile Organic Compounds	500 - 700 g/l [*Details:*As Packaged.]
Percent volatile	50 - 65 % weight
VOC Less H2O & Exempt Solvents	*No Data Available*
Molecular weight	*Not Applicable*

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

10.5. Incompatible materials
Strong oxidizing agents

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:
May be harmful if inhaled. 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. May cause additional health effects (see below).

Eye Contact:
Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion:
May be harmful if swallowed. 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
Nickel Compounds (except alloys)	61788-71-4	Known To Be Human Carcinogen.	National Toxicology Program Carcinogens
Nickel compounds	61788-71-4	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
Butyl Methacrylate	97-88-1	Grp. 2B: Possible human carc.	International Agency for Research on Cancer
Cumene	98-82-8	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Cumene	98-82-8	Anticipated human carcinogen	National Toxicology Program Carcinogens
Ethylbenzene	100-41-4	Grp. 2B: Possible human carc.	International Agency for Research on Cancer
Naphthalene	91-20-3	Grp. 2B: Possible human carc.	International Agency for Research on Cancer
Naphthalene	91-20-3	Anticipated human carcinogen	National Toxicology Program Carcinogens

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 >20 - =50 mg/l
Overall product	Ingestion		No data available; calculated ATE >2,000 - =5,000 mg/kg
Heavy aromatic solvent naphtha (petroleum)	Inhalation-Vapor	Professional judgement	LC50 estimated to be 20 - 50 mg/l
Heavy aromatic solvent naphtha (petroleum)	Dermal	Rabbit	LD50 > 2,000 mg/kg
Heavy aromatic solvent naphtha (petroleum)	Ingestion	Rat	LD50 > 5,000 mg/kg
2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	Dermal		LD50 estimated to be > 5,000 mg/kg
2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Pine oil	Dermal	Rat	LD50 > 2,000 mg/kg
Pine oil	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 4.76 mg/l
Pine oil	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
Cyclohexanone	Dermal	Rabbit	LD50 >794, <3160 mg/kg
Cyclohexanone	Inhalation-Vapor (4 hours)	Rat	LC50 > 6.2 mg/l
Cyclohexanone	Ingestion	Rat	LD50 1,296 mg/kg
Light aromatic solvent naphtha (petroleum)	Dermal	Rabbit	LD50 > 2,000 mg/kg
Light aromatic solvent naphtha (petroleum)	Inhalation-Vapor (4 hours)	Rat	LC50 > 5.2 mg/l
Light aromatic solvent naphtha (petroleum)	Ingestion	Rat	LD50 > 5,000 mg/kg
Vinyl polymer	Dermal	Rabbit	LD50 > 8,000 mg/kg
Vinyl polymer	Ingestion	Rat	LD50 > 8,000 mg/kg
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Dermal	Rat	LD50 > 2,500 mg/kg
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Ingestion	Rat	LD50 > 5,000 mg/kg
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 > 5.2 mg/l
1,2,4-Trimethylbenzene	Dermal	Rabbit	LD50 > 3,160 mg/kg
1,2,4-Trimethylbenzene	Inhalation-Vapor (4 hours)	Rat	LC50 18 mg/l
1,2,4-Trimethylbenzene	Ingestion	Rat	LD50 3,400 mg/kg
Organic pigment	Dermal		LD50 estimated to be > 5,000 mg/kg
Organic pigment	Inhalation-Dust/Mist		LC50 estimated to be > 12.5 mg/l
Organic pigment	Ingestion		LD50 estimated to be > 5,000 mg/kg
Xylene	Dermal	Rabbit	LD50 > 4,200 mg/kg
Xylene	Inhalation-	Rat	LC50 29 mg/l

	Vapor (4 hours)		
Xylene	Ingestion	Rat	LD50 3,523 mg/kg
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	Dermal	Rabbit	LD50 > 2,000 mg/kg
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5 mg/l
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	Ingestion	Rat	LD50 > 2,000 mg/kg
d-Limonene	Inhalation-Vapor (4 hours)	Mouse	LC50 > 3.14 mg/l
d-Limonene	Dermal	Rabbit	LD50 > 5,000 mg/kg
d-Limonene	Ingestion	Rat	LD50 4,400 mg/kg
Ethylbenzene	Dermal	Rabbit	LD50 15,433 mg/kg
Ethylbenzene	Inhalation-Vapor (4 hours)	Rat	LC50 17.4 mg/l
Ethylbenzene	Ingestion	Rat	LD50 4,769 mg/kg
n-Butyl methacrylate	Dermal	Rabbit	LD50 > 2,000 mg/kg
n-Butyl methacrylate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 27 mg/l
n-Butyl methacrylate	Ingestion	Rat	LD50 > 2,000 mg/kg
Naphthalene	Dermal	Human	LD50 estimated to be 2,000 - 5,000 mg/kg
Naphthalene	Inhalation-Vapor	Human	LC50 estimated to be 20 - 50 mg/l
Naphthalene	Ingestion	Human	LD50 estimated to be 300 - 2,000 mg/kg
Naphthenic Acid	Dermal	Rabbit	LD50 > 20,000 mg/kg
Naphthenic Acid	Ingestion	Rat	LD50 5,880 mg/kg
Cumene	Dermal	Rabbit	LD50 > 3,160 mg/kg
Cumene	Inhalation-Vapor (4 hours)	Rat	LC50 39.4 mg/l
Cumene	Ingestion	Rat	LD50 2,260 mg/kg
Nickel salts of naphthenic acids	Ingestion	Rat	LD50 419 mg/kg
Toluene	Dermal	Rat	LD50 12,000 mg/kg
Toluene	Inhalation-Vapor (4 hours)	Rat	LC50 30 mg/l
Toluene	Ingestion	Rat	LD50 5,550 mg/kg
Glycolic acid, butyl ester	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
Glycolic acid, butyl ester	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.2 mg/l
Glycolic acid, butyl ester	Ingestion	Rat	LD50 4,595 mg/kg
2,3-Epoxypropyl neodecanoate	Dermal	Rat	LD50 > 2,000 mg/kg
2,3-Epoxypropyl neodecanoate	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Heavy aromatic solvent naphtha (petroleum)	Rabbit	Minimal irritation
Pine oil	Rabbit	Irritant
1-Methoxy-2-propyl acetate	Rabbit	No significant irritation
Cyclohexanone	Rabbit	Irritant
Light aromatic solvent naphtha (petroleum)	Rabbit	Irritant
Vinyl polymer	Professional judgement	No significant irritation
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Rabbit	No significant irritation
1,2,4-Trimethylbenzene	Rabbit	Irritant

Organic pigment	Professional judgement	No significant irritation
Xylene	Rabbit	Mild irritant
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	Rabbit	Corrosive
d-Limonene	Rabbit	Irritant
Ethylbenzene	Rabbit	Mild irritant
n-Butyl methacrylate	Rabbit	Irritant
Naphthalene	Rabbit	Minimal irritation
Naphthenic Acid	Rabbit	Mild irritant
Cumene	Rabbit	Minimal irritation
Nickel salts of naphthenic acids	Professional judgement	Minimal irritation
Toluene	Rabbit	Irritant
Glycolic acid, butyl ester	Rabbit	No significant irritation
2,3-Epoxypropyl neodecanoate	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Heavy aromatic solvent naphtha (petroleum)	Rabbit	Mild irritant
Pine oil	Rabbit	Moderate irritant
1-Methoxy-2-propyl acetate	Rabbit	Mild irritant
Cyclohexanone	In vitro data	Corrosive
Light aromatic solvent naphtha (petroleum)	Rabbit	Mild irritant
Vinyl polymer	Professional judgement	No significant irritation
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Rabbit	No significant irritation
1,2,4-Trimethylbenzene	Rabbit	Mild irritant
Organic pigment	Professional judgement	No significant irritation
Xylene	Rabbit	Mild irritant
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	Rabbit	Corrosive
d-Limonene	Rabbit	Mild irritant
Ethylbenzene	Rabbit	Moderate irritant
n-Butyl methacrylate	Rabbit	Mild irritant
Naphthalene	Rabbit	No significant irritation
Naphthenic Acid	Rabbit	Moderate irritant
Cumene	Rabbit	Mild irritant
Nickel salts of naphthenic acids	Professional judgement	Mild irritant
Toluene	Rabbit	Moderate irritant
Glycolic acid, butyl ester	Rabbit	Corrosive
2,3-Epoxypropyl neodecanoate	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
Heavy aromatic solvent naphtha (petroleum)	Guinea pig	Not classified
Pine oil	Human and animal	Not classified
1-Methoxy-2-propyl acetate	Guinea pig	Not classified
Cyclohexanone	Guinea	Not classified

	pig	
Light aromatic solvent naphtha (petroleum)	Guinea pig	Not classified
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Mouse	Not classified
1,2,4-Trimethylbenzene	Guinea pig	Not classified
d-Limonene	Mouse	Sensitizing
Ethylbenzene	Human	Not classified
n-Butyl methacrylate	Guinea pig	Sensitizing
Naphthenic Acid	Guinea pig	Sensitizing
Cumene	Guinea pig	Not classified
Nickel salts of naphthenic acids	similar compounds	Sensitizing
Toluene	Guinea pig	Not classified
Glycolic acid, butyl ester	Guinea pig	Not classified
2,3-Epoxypropyl neodecanoate	Guinea pig	Sensitizing

Respiratory Sensitization

Name	Species	Value
Nickel salts of naphthenic acids	Professional judgement	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
Heavy aromatic solvent naphtha (petroleum)	In Vitro	Not mutagenic
Heavy aromatic solvent naphtha (petroleum)	In vivo	Not mutagenic
Pine oil	In Vitro	Not mutagenic
1-Methoxy-2-propyl acetate	In Vitro	Not mutagenic
Cyclohexanone	In Vitro	Not mutagenic
Cyclohexanone	In vivo	Not mutagenic
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	In Vitro	Not mutagenic
1,2,4-Trimethylbenzene	In Vitro	Not mutagenic
Xylene	In Vitro	Not mutagenic
Xylene	In vivo	Not mutagenic
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) -2,5-pyrrolidinedione	In Vitro	Not mutagenic
d-Limonene	In Vitro	Not mutagenic
d-Limonene	In vivo	Not mutagenic
Ethylbenzene	In vivo	Not mutagenic
Ethylbenzene	In Vitro	Some positive data exist, but the data are not sufficient for classification
n-Butyl methacrylate	In Vitro	Not mutagenic
n-Butyl methacrylate	In vivo	Not mutagenic
Naphthenic Acid	In vivo	Not mutagenic
Naphthenic Acid	In Vitro	Some positive data exist, but the data are not sufficient for classification
Cumene	In Vitro	Not mutagenic
Cumene	In vivo	Not mutagenic
Nickel salts of naphthenic acids	In Vitro	Some positive data exist, but the data are not sufficient for classification
Nickel salts of naphthenic acids	In vivo	Mutagenic
Toluene	In Vitro	Not mutagenic
Toluene	In vivo	Not mutagenic
2,3-Epoxypropyl neodecanoate	In Vitro	Some positive data exist, but the data are not sufficient for classification

2,3-Epoxypropyl neodecanoate	In vivo	Mutagenic

Carcinogenicity

Name	Route	Species	Value
Cyclohexanone	Ingestion	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
Light aromatic solvent naphtha (petroleum)	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification
Xylene	Dermal	Rat	Not carcinogenic
Xylene	Ingestion	Multiple animal species	Not carcinogenic
Xylene	Inhalation	Human	Some positive data exist, but the data are not sufficient for classification
d-Limonene	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
Ethylbenzene	Inhalation	Multiple animal species	Carcinogenic
n-Butyl methacrylate	Inhalation	Multiple animal species	Carcinogenic
Naphthalene	Inhalation	Multiple animal species	Carcinogenic
Cumene	Inhalation	Multiple animal species	Carcinogenic
Nickel salts of naphthenic acids	Inhalation	similar compounds	Carcinogenic
Toluene	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Toluene	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
Toluene	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Heavy aromatic solvent naphtha (petroleum)	Not Specified	Not classified for female reproduction	Rat	NOAEL Not available	2 generation
Heavy aromatic solvent naphtha (petroleum)	Not Specified	Not classified for male reproduction	Rat	NOAEL Not available	2 generation
Heavy aromatic solvent naphtha (petroleum)	Not Specified	Not classified for development	Rat	NOAEL Not available	2 generation
Pine oil	Ingestion	Not classified for development	Rat	NOAEL 600 mg/kg/day	during gestation
Pine oil	Ingestion	Not classified for female reproduction	Rat	NOAEL 250 mg/kg/day	premating into lactation
Pine oil	Ingestion	Toxic to male reproduction	Rat	NOAEL 250 mg/kg/day	5 weeks
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	during

				mg/l	organogenesis
Cyclohexanone	Inhalation	Not classified for female reproduction	Rat	NOAEL 4 mg/l	2 generation
Cyclohexanone	Ingestion	Not classified for development	Rabbit	NOAEL 500 mg/kg/day	during gestation
Cyclohexanone	Inhalation	Not classified for male reproduction	Rat	NOAEL 2 mg/l	2 generation
Cyclohexanone	Inhalation	Not classified for development	Rat	NOAEL 2.6 mg/l	during gestation
Light aromatic solvent naphtha (petroleum)	Inhalation	Not classified for female reproduction	Rat	NOAEL 1,500 ppm	2 generation
Light aromatic solvent naphtha (petroleum)	Inhalation	Not classified for male reproduction	Rat	NOAEL 1,500 ppm	2 generation
Light aromatic solvent naphtha (petroleum)	Inhalation	Not classified for development	Rat	NOAEL 500 ppm	2 generation
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating into lactation
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	30 days
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during gestation
1,2,4-Trimethylbenzene	Inhalation	Not classified for female reproduction	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	Not classified for male reproduction	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	Not classified for development	Rat	NOAEL 1.5 mg/l	during gestation
Xylene	Inhalation	Not classified for female reproduction	Human	NOAEL Not available	occupational exposure
Xylene	Ingestion	Not classified for development	Mouse	NOAEL Not available	during organogenesis
Xylene	Inhalation	Not classified for development	Multiple animal species	NOAEL Not available	during gestation
d-Limonene	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	premating & during gestation
d-Limonene	Ingestion	Not classified for development	Multiple animal species	NOAEL 591 mg/kg/day	during organogenesis
Ethylbenzene	Inhalation	Not classified for development	Rat	NOAEL 4.3 mg/l	premating & during gestation
n-Butyl methacrylate	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	44 days
n-Butyl methacrylate	Ingestion	Not classified for female reproduction	Rat	NOAEL 300 mg/kg/day	premating & during gestation
n-Butyl methacrylate	Ingestion	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during gestation
n-Butyl methacrylate	Inhalation	Not classified for development	Rat	NOAEL 1.8 mg/l	during gestation
Naphthenic Acid	Ingestion	Not classified for female reproduction	Rat	NOAEL 900 mg/kg/day	premating into lactation
Naphthenic Acid	Ingestion	Not classified for male reproduction	Rat	NOAEL 900 mg/kg/day	28 days
Naphthenic Acid	Ingestion	Toxic to development	Rat	NOAEL 100 mg/kg/day	premating into lactation
Cumene	Inhalation	Not classified for development	Rabbit	NOAEL 11.3 mg/l	during organogenesis
Nickel salts of naphthenic acids	Ingestion	Toxic to development	similar compounds	NOAEL not available	2 generation
Toluene	Inhalation	Not classified for female reproduction	Human	NOAEL Not	occupational

				available	exposure
Toluene	Inhalation	Not classified for male reproduction	Rat	NOAEL 2.3 mg/l	1 generation
Toluene	Ingestion	Toxic to development	Rat	LOAEL 520 mg/kg/day	during gestation
Toluene	Inhalation	Toxic to development	Human	NOAEL Not available	poisoning and/or abuse
Glycolic acid, butyl ester	Ingestion	Toxic to development	Rat	NOAEL 250 mg/kg/day	during organogenesis
2,3-Epoxypropyl neodecanoate	Ingestion	Not classified for female reproduction	Rat	NOAEL 300 mg/kg/day	2 generation
2,3-Epoxypropyl neodecanoate	Ingestion	Not classified for male reproduction	Rat	NOAEL 300 mg/kg/day	2 generation
2,3-Epoxypropyl neodecanoate	Ingestion	Toxic to development	Rat	NOAEL 50 mg/kg/day	2 generation

Lactation

Name	Route	Species	Value
Xylene	Ingestion	Mouse	Not classified for effects on or via lactation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Heavy aromatic solvent naphtha (petroleum)	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Pine oil	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	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	
Cyclohexanone	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Guinea pig	LOAEL 16.1 mg/l	6 hours
Cyclohexanone	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	
Cyclohexanone	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Light aromatic solvent naphtha (petroleum)	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Light aromatic solvent naphtha (petroleum)	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Professional judgement	NOAEL Not available	
Light aromatic solvent naphtha (petroleum)	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
1,2,4-Trimethylbenzene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
1,2,4-Trimethylbenzene	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
1,2,4-Trimethylbenzene	Ingestion	central nervous	May cause drowsiness or	Professio	NOAEL Not	

		system depression	dizziness	nal judgeme nt	available	
Xylene	Inhalation	auditory system	Causes damage to organs	Rat	LOAEL 6.3 mg/l	8 hours
Xylene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Xylene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Xylene	Inhalation	eyes	Not classified	Rat	NOAEL 3.5 mg/l	not available
Xylene	Inhalation	liver	Not classified	Multiple animal species	NOAEL Not available	
Xylene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	
Xylene	Ingestion	eyes	Not classified	Rat	NOAEL 250 mg/kg	not applicable
3-Dodecyl-1-(2,2,6,6-tetramethyl-4-piperidinyl) - 2,5-pyrrolidinedione	Inhalation	respiratory irritation	May cause respiratory irritation	similar health hazards	NOAEL Not available	
d-Limonene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
d-Limonene	Ingestion	nervous system	Not classified		NOAEL Not available	
Ethylbenzene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Ethylbenzene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human and animal	NOAEL Not available	
n-Butyl methacrylate	Inhalation	respiratory irritation	May cause respiratory irritation		NOAEL Not available	
Naphthalene	Ingestion	blood	Causes damage to organs	Human	NOAEL Not available	poisoning and/or abuse
Naphthenic Acid	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
Cumene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	not available
Cumene	Inhalation	respiratory irritation	May cause respiratory irritation	Human	LOAEL 0.2 mg/l	occupational exposure
Cumene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	not available
Toluene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Toluene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Toluene	Inhalation	immune system	Not classified	Mouse	NOAEL 0.004 mg/l	3 hours
Toluene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
Glycolic acid, butyl ester	Inhalation	respiratory irritation	May cause respiratory irritation	Rat	NOAEL 0.4 mg/l	4 hours

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Pine oil	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 2.23 mg/l	13 weeks
Pine oil	Inhalation	eyes	Not classified	Rat	NOAEL 2.23 mg/l	13 weeks

Pine oil	Inhalation	respiratory system	Not classified	Rat	NOAEL 2.23 mg/l	13 weeks
Pine oil	Ingestion	liver	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	heart	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	skin	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	endocrine system	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	immune system	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	muscles	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	nervous system	Not classified	Rat	NOAEL 750 mg/kg/day	5 weeks
Pine oil	Ingestion	respiratory system	Not classified	Rat	NOAEL 750 mg/kg/day	5 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
Cyclohexanone	Inhalation	liver	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	heart	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	skin	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	endocrine system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	immune system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	muscles	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	nervous system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	eyes	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	respiratory system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Inhalation	vascular system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
Cyclohexanone	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 407 mg/kg/day	3 months
Cyclohexanone	Ingestion	eyes	Not classified	Rat	NOAEL 407	3 months

					mg/kg/day	
Cyclohexanone	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 407 mg/kg/day	3 months
N, N'-Dimethyl-3,4,9,10-perylenetetracarboximide	Inhalation	respiratory system	May cause damage to organs though prolonged or repeated exposure	similar compoun ds	NOAEL 0.001 mg/l	90 days
1,2,4-Trimethylbenzene	Inhalation	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.5 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.1 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
1,2,4-Trimethylbenzene	Inhalation	liver	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	heart	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	endocrine system	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Inhalation	immune system	Not classified	Rat	NOAEL 1.2 mg/l	3 months
1,2,4-Trimethylbenzene	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 600 mg/kg/day	14 days
1,2,4-Trimethylbenzene	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
1,2,4-Trimethylbenzene	Ingestion	immune system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
1,2,4-Trimethylbenzene	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Xylene	Inhalation	nervous system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.4 mg/l	4 weeks
Xylene	Inhalation	auditory system	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 7.8 mg/l	5 days
Xylene	Inhalation	liver	Not classified	Multiple animal species	NOAEL Not available	
Xylene	Inhalation	heart	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	endocrine system	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	gastrointestinal tract	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	hematopoietic system	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	muscles	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	kidney and/or bladder	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Inhalation	respiratory system	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
Xylene	Ingestion	auditory system	Not classified	Rat	NOAEL 900	2 weeks

					mg/kg/day	
Xylene	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,500 mg/kg/day	90 days
Xylene	Ingestion	liver	Not classified	Multiple animal species	NOAEL Not available	
Xylene	Ingestion	heart	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	skin	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	endocrine system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	hematopoietic system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	immune system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	nervous system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
Xylene	Ingestion	respiratory system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
d-Limonene	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 75 mg/kg/day	103 weeks
d-Limonene	Ingestion	liver	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks
d-Limonene	Ingestion	heart	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	endocrine system	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	immune system	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	muscles	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	nervous system	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
d-Limonene	Ingestion	respiratory system	Not classified	Rat	NOAEL 600 mg/kg/day	103 weeks
Ethylbenzene	Inhalation	auditory system	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 0.9 mg/l	13 weeks
Ethylbenzene	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.1 mg/l	2 years
Ethylbenzene	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Mouse	NOAEL 1.1 mg/l	103 weeks
Ethylbenzene	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 3.4 mg/l	28 days
Ethylbenzene	Inhalation	endocrine system	Not classified	Mouse	NOAEL 3.3 mg/l	103 weeks
Ethylbenzene	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 3.3 mg/l	2 years
Ethylbenzene	Inhalation	bone, teeth, nails,	Not classified	Multiple	NOAEL 4.2	90 days

		and/or hair		animal species	mg/l	
Ethylbenzene	Inhalation	muscles	Not classified	Multiple animal species	NOAEL 4.2 mg/l	90 days
Ethylbenzene	Inhalation	heart	Not classified	Multiple animal species	NOAEL 3.3 mg/l	2 years
Ethylbenzene	Inhalation	immune system	Not classified	Multiple animal species	NOAEL 3.3 mg/l	2 years
Ethylbenzene	Inhalation	respiratory system	Not classified	Multiple animal species	NOAEL 3.3 mg/l	2 years
Ethylbenzene	Ingestion	liver	Not classified	Rat	NOAEL 680 mg/kg/day	6 months
Ethylbenzene	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 680 mg/kg/day	6 months
n-Butyl methacrylate	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	olfactory system	Not classified	Rat	NOAEL 1.8 mg/l	28 days
n-Butyl methacrylate	Inhalation	heart	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	endocrine system	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	liver	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	nervous system	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Inhalation	respiratory system	Not classified	Rat	NOAEL 11 mg/l	28 days
n-Butyl methacrylate	Ingestion	olfactory system	Not classified	Rat	NOAEL 60 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	endocrine system	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	liver	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	nervous system	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	heart	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
n-Butyl methacrylate	Ingestion	immune system	Not classified	Rat	NOAEL 360 mg/kg/day	90 days
Naphthalene	Dermal	blood	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Naphthalene	Dermal	eyes	Not classified	Human	NOAEL Not available	occupational exposure
Naphthalene	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.01 mg/l	13 weeks
Naphthalene	Inhalation	blood	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Naphthalene	Inhalation	eyes	Not classified	Human	NOAEL Not available	occupational exposure
Naphthalene	Ingestion	blood	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Naphthalene	Ingestion	eyes	May cause damage to organs though prolonged or repeated exposure	Rabbit	LOAEL 500 mg/kg/day	15 days
Naphthenic Acid	Ingestion	endocrine system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days

Naphthenic Acid	Ingestion	liver	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	heart	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	skin	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	immune system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	muscles	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	nervous system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	eyes	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	respiratory system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Naphthenic Acid	Ingestion	vascular system	Not classified	Rat	NOAEL 881 mg/kg/day	90 days
Cumene	Inhalation	auditory system	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	endocrine system	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	liver	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	nervous system	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	eyes	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 4.9 mg/l	13 weeks
Cumene	Inhalation	respiratory system	Not classified	Rat	NOAEL 59 mg/l	13 weeks
Cumene	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Cumene	Ingestion	heart	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Cumene	Ingestion	endocrine system	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Cumene	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Cumene	Ingestion	liver	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Cumene	Ingestion	respiratory system	Not classified	Rat	NOAEL 769 mg/kg/day	6 months
Nickel salts of naphthenic acids	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	similar compoun ds	NOAEL not available	13 weeks
Toluene	Inhalation	auditory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	nervous system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	eyes	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	olfactory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for	Rat	LOAEL 2.3 mg/l	15 months

			classification			
Toluene	Inhalation	heart	Not classified	Rat	NOAEL 11.3 mg/l	15 weeks
Toluene	Inhalation	liver	Not classified	Rat	NOAEL 11.3 mg/l	15 weeks
Toluene	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 11.3 mg/l	15 weeks
Toluene	Inhalation	endocrine system	Not classified	Rat	NOAEL 1.1 mg/l	4 weeks
Toluene	Inhalation	immune system	Not classified	Mouse	NOAEL Not available	20 days
Toluene	Inhalation	bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 1.1 mg/l	8 weeks
Toluene	Inhalation	hematopoietic system	Not classified	Human	NOAEL Not available	occupational exposure
Toluene	Inhalation	vascular system	Not classified	Human	NOAEL Not available	occupational exposure
Toluene	Inhalation	gastrointestinal tract	Not classified	Multiple animal species	NOAEL 11.3 mg/l	15 weeks
Toluene	Ingestion	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 625 mg/kg/day	13 weeks
Toluene	Ingestion	heart	Not classified	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Toluene	Ingestion	liver	Not classified	Multiple animal species	NOAEL 2,500 mg/kg/day	13 weeks
Toluene	Ingestion	kidney and/or bladder	Not classified	Multiple animal species	NOAEL 2,500 mg/kg/day	13 weeks
Toluene	Ingestion	hematopoietic system	Not classified	Mouse	NOAEL 600 mg/kg/day	14 days
Toluene	Ingestion	endocrine system	Not classified	Mouse	NOAEL 105 mg/kg/day	28 days
Toluene	Ingestion	immune system	Not classified	Mouse	NOAEL 105 mg/kg/day	4 weeks
Glycolic acid, butyl ester	Ingestion	blood	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 100 mg/kg/day	90 days
Glycolic acid, butyl ester	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 100 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 100 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	heart	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	skin	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl	Ingestion	immune system	Not classified	Rat	NOAEL	90 days

neodecanoate					1,000 mg/kg/day	
2,3-Epoxypropyl neodecanoate	Ingestion	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	eyes	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
2,3-Epoxypropyl neodecanoate	Ingestion	vascular system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days

Aspiration Hazard

Name	Value
Heavy aromatic solvent naphtha (petroleum)	Aspiration hazard
Light aromatic solvent naphtha (petroleum)	Aspiration hazard
1,2,4-Trimethylbenzene	Aspiration hazard
Xylene	Aspiration hazard
d-Limonene	Aspiration hazard
Ethylbenzene	Aspiration hazard
Cumene	Aspiration hazard
Toluene	Aspiration hazard

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.

Dispose of waste product in a permitted industrial waste 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. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. 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: 3 **Flammability:** 2 **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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3M Canada SDSs are available at www.3M.ca