



Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Epoxy Adhesive 2290, Amber

Product Identification Numbers

62-3847-7530-0, 62-3847-7535-9, 62-3847-8531-7, 62-3847-9530-8
7000000897, 7100144895, 7100144896, 7010329731

1.2. Recommended use and restrictions on use

Recommended use

Industrial use

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification

Flammable Liquid: Category 2.
Serious Eye Damage/Irritation: Category 1.
Skin Sensitizer: Category 1.
Germ Cell Mutagenicity: Category 2.
Carcinogenicity: Category 2.
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**

Highly flammable liquid and vapor.

Causes serious eye damage.

May cause an allergic skin reaction.

Suspected of causing genetic defects.

Suspected of causing cancer.

May damage fertility or the unborn child.

May cause drowsiness or dizziness.

May cause damage to organs through prolonged or repeated exposure: gastrointestinal tract.

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 vapors.

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).

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: Immediately call a POISON CENTER or doctor.

Get medical attention if you feel unwell.

If skin irritation or rash occurs: Get medical attention.

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.

4% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
methyl ethyl ketone	78-93-3	55 - 65 Trade Secret *
tetrahydrofuran	109-99-9	10 - 20 Trade Secret *
epoxy resin	25068-38-6	10 - 15 Trade Secret *
phenoxy resin	5026-74-4	3 - 7 Trade Secret *
1-methyl-2-pyrrolidinone	872-50-4	1 - 5 Trade Secret *
toluene	108-88-3	<= 0.4

*The specific chemical identity and/or exact percentage (concentration) of this composition 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 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. 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

Aldehydes

Hydrocarbons

Carbon monoxide

Condition

During Combustion

During Combustion

During Combustion

Carbon dioxide
Hydrogen Chloride
Hydrogen Cyanide
Ketones
Ammonia
Oxides of Nitrogen

During Combustion
During Combustion
During Combustion
During Combustion
During Combustion
During Combustion

5.3. Special protective 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 vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors 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. 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

For industrial/occupational 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/vapors/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 heat. Store away from acids. Store away from oxidizing agents.

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
toluene	108-88-3	ACGIH	TWA:20 ppm	A4: Not class. as human carcin, Ototoxicant
toluene	108-88-3	OSHA	TWA:200 ppm;CEIL:300 ppm	
tetrahydrofuran	109-99-9	ACGIH	TWA:50 ppm;STEL:100 ppm	A3: Confirmed animal carcin., Danger of cutaneous absorption
tetrahydrofuran	109-99-9	OSHA	TWA:590 mg/m3(200 ppm)	
methyl ethyl ketone	78-93-3	ACGIH	TWA:75 ppm;STEL:150 ppm	Danger of cutaneous absorption
methyl ethyl ketone	78-93-3	OSHA	TWA:590 mg/m3(200 ppm)	
1-methyl-2-pyrrolidinone	872-50-4	AIHA	TWA:60 mg/m3(15 ppm);STEL(15 minutes):120 mg/m3(30 ppm)	SKIN

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

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/vapors/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:

Half facepiece or full facepiece air-purifying respirator suitable for organic vapors

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
Color	Clear Yellow
Odor	Moderate Ketones
Odor threshold	No Data Available
pH	No Data Available
Melting point	No Data Available
Boiling Point	151.00 °F [Details:CONDITIONS: THF]
Flash Point	6 °F [Test Method:Tagliabue Closed Cup]
Evaporation rate	>=2 [Ref Std:ETHER=1]
Flammability	Flammable Liquid: Category 2.
Flammable Limits(LEL)	2.00 % volume
Flammable Limits(UEL)	11.80 % volume
Vapor Pressure	145.0000 mmHg [Details:CONDITIONS: @ 68F]
Relative Vapor Density	2.50 [Ref Std:AIR=1]
Density	0.89 g/ml
Relative Density	0.89 [Ref Std:WATER=1]
Solubility in Water	Slight (less than 10%)
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	75.8 mm2/sec
Hazardous Air Pollutants	< 1 % weight [Test Method:Calculated]
Molecular weight	No Data Available
VOC Less H2O & Exempt Solvents	701 g/l [Test Method:calculated SCAQMD rule 443.1]
VOC Less H2O & Exempt Solvents	78.8 % [Test Method:calculated per CARB title 2]
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

Heat

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:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause additional health effects (see below).

Skin Contact:

Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. 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:

Gastrointestinal Effects: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Reproductive/Developmental Toxicity:

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Genotoxicity:

Genotoxicity and Mutagenicity: May interact with genetic material and possibly alter gene expression.

Carcinogenicity:

Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
Tetrahydrofuran	109-99-9	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

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 >2,000 - =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
tetrahydrofuran	Dermal	Rat	LD50 > 2,000 mg/kg
tetrahydrofuran	Inhalation-Vapor (4 hours)	Rat	LC50 54 mg/l
tetrahydrofuran	Ingestion	Rat	LD50 1,650 mg/kg
epoxy resin	Dermal	Rat	LD50 > 1,600 mg/kg
epoxy resin	Ingestion	Rat	LD50 > 1,000 mg/kg
phenoxy resin	Dermal	Rat	LD50 > 4,000 mg/kg
phenoxy resin	Ingestion	Rat	LD50 1,037 mg/kg
1-methyl-2-pyrrolidinone	Dermal	Rabbit	LD50 4,000 mg/kg
1-methyl-2-pyrrolidinone	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.1 mg/l
1-methyl-2-pyrrolidinone	Ingestion	Rat	LD50 4,320 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

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
methyl ethyl ketone	Rabbit	Minimal irritation
tetrahydrofuran	Rabbit	Minimal irritation
epoxy resin	Rabbit	Mild irritant
phenoxy resin	Rabbit	No significant irritation

1-methyl-2-pyrrolidinone	Rabbit	Minimal irritation
toluene	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
methyl ethyl ketone	Rabbit	Severe irritant
tetrahydrofuran	Rabbit	Corrosive
epoxy resin	Rabbit	Moderate irritant
phenoxy resin	Rabbit	Mild irritant
1-methyl-2-pyrrolidinone	Rabbit	Severe irritant
toluene	Rabbit	Moderate irritant

Skin Sensitization

Name	Species	Value
tetrahydrofuran	Human and animal	Not classified
epoxy resin	Human and animal	Sensitizing
phenoxy resin	Mouse	Sensitizing
1-methyl-2-pyrrolidinone	Human and animal	Not classified
toluene	Guinea pig	Not classified

Respiratory Sensitization

Name	Species	Value
epoxy resin	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
methyl ethyl ketone	In Vitro	Not mutagenic
tetrahydrofuran	In Vitro	Not mutagenic
tetrahydrofuran	In vivo	Not mutagenic
epoxy resin	In vivo	Not mutagenic
epoxy resin	In Vitro	Some positive data exist, but the data are not sufficient for classification
phenoxy resin	In Vitro	Some positive data exist, but the data are not sufficient for classification
phenoxy resin	In vivo	Mutagenic
1-methyl-2-pyrrolidinone	In vivo	Not mutagenic
1-methyl-2-pyrrolidinone	In Vitro	Some positive data exist, but the data are not sufficient for classification
toluene	In Vitro	Not mutagenic
toluene	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
methyl ethyl ketone	Inhalation	Human	Not carcinogenic
tetrahydrofuran	Inhalation	Multiple animal species	Carcinogenic
epoxy resin	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
1-methyl-2-pyrrolidinone	Inhalation	Rat	Not 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
methyl ethyl ketone	Inhalation	Not classified for development	Rat	LOAEL 8.8 mg/l	during gestation
tetrahydrofuran	Ingestion	Not classified for female reproduction	Rat	NOAEL 782 mg/kg/day	2 generation
tetrahydrofuran	Ingestion	Not classified for male reproduction	Rat	NOAEL 782 mg/kg/day	2 generation
tetrahydrofuran	Ingestion	Not classified for development	Rat	NOAEL 305 mg/kg/day	2 generation
tetrahydrofuran	Inhalation	Not classified for development	Mouse	NOAEL 1.8 mg/l	during gestation
epoxy resin	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
epoxy resin	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
epoxy resin	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
epoxy resin	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
phenoxy resin	Ingestion	Not classified for male reproduction	Rat	NOAEL 25 mg/kg/day	2 generation
phenoxy resin	Ingestion	Not classified for development	Rat	NOAEL 15 mg/kg/day	during gestation
phenoxy resin	Ingestion	Toxic to female reproduction	Rat	NOAEL 50 mg/kg/day	28 days
1-methyl-2-pyrrolidinone	Inhalation	Not classified for development	Rat	LOAEL 0.68 mg/l	during gestation
1-methyl-2-pyrrolidinone	Ingestion	Toxic to female reproduction	Rat	LOAEL 50 mg/kg/day	2 generation
1-methyl-2-pyrrolidinone	Ingestion	Toxic to male reproduction	Rat	LOAEL 50 mg/kg/day	2 generation
1-methyl-2-pyrrolidinone	Dermal	Toxic to development	Rat	NOAEL 237 mg/kg/day	during organogenesis
1-methyl-2-pyrrolidinone	Ingestion	Toxic to development	Rat	NOAEL 160 mg/kg/day	2 generation
toluene	Inhalation	Not classified for female reproduction	Human	NOAEL Not available	occupational 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

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
tetrahydrofuran	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
tetrahydrofuran	Inhalation	respiratory irritation	May cause respiratory irritation		NOAEL Not available	
tetrahydrofuran	Inhalation	respiratory system	Not classified	Rabbit	NOAEL 2.9 mg/l	4 hours
tetrahydrofuran	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Rat	NOAEL 180 mg/kg	not applicable
epoxy resin	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
1-methyl-2-pyrrolidinone	Inhalation	respiratory irritation	Not classified	Human	NOAEL 0.05 mg/l	8 hours
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

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 mg/l	90 days
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
tetrahydrofuran	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.6 mg/l	12 weeks
tetrahydrofuran	Inhalation	respiratory system	Not classified	Rat	NOAEL 2.9 mg/l	12 weeks
tetrahydrofuran	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 0.6 mg/l	105 weeks

tetrahydrofuran	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL Not available	2 weeks
epoxy resin	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
epoxy resin	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
epoxy resin	Ingestion	auditory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	heart	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	eyes	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
epoxy resin	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
phenoxy resin	Ingestion	gastrointestinal tract	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 15 mg/kg/day	90 days
phenoxy resin	Ingestion	endocrine system	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	liver	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	immune system	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	nervous system	Not classified	Rat	NOAEL 450 mg/kg/day	28 days
phenoxy resin	Ingestion	eyes	Not classified	Rat	NOAEL 15 mg/kg/day	90 days
1-methyl-2-pyrrolidinone	Inhalation	bone marrow	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.5 mg/l	4 weeks
1-methyl-2-pyrrolidinone	Inhalation	immune system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.5 mg/l	4 weeks
1-methyl-2-pyrrolidinone	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.5 mg/l	4 weeks
1-methyl-2-pyrrolidinone	Ingestion	endocrine system	Not classified	Rat	NOAEL 250 mg/kg/day	90 days
1-methyl-2-pyrrolidinone	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 2,060 mg/kg/day	4 weeks
1-methyl-2-pyrrolidinone	Ingestion	nervous system	Not classified	Rat	NOAEL 1,057 mg/kg/day	90 days
1-methyl-2-pyrrolidinone	Ingestion	hematopoietic	Not classified	Mouse	NOAEL 300	90 days

		system			mg/kg/day	
1-methyl-2-pyrrolidinone	Ingestion	liver	Not classified	Mouse	NOAEL 150 mg/kg/day	3 months
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 classification	Rat	LOAEL 2.3 mg/l	15 months
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

Aspiration Hazard

Name	Value
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**Ecotoxicological information**

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material

and/or its components.

Chemical fate information

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

SECTION 13: Disposal considerations

13.1. Disposal methods

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

Dispose of completely cured (or polymerized) material in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. 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.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable), D035 (Methyl ethyl ketone)

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. US Federal Regulations

Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards

Flammable (gases, aerosols, liquids, or solids)

Health Hazards

Carcinogenicity

Germ cell mutagenicity

Reproductive toxicity

Respiratory or Skin Sensitization

Serious eye damage or eye irritation

Specific target organ toxicity (single or repeated exposure)

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient

1-methyl-2-pyrrolidinone

C.A.S. No

872-50-4

% by Wt

Trade Secret 1 - 5

This material contains a chemical which requires export notification under TSCA Section 12[b]:

Ingredient (Category if applicable)

1-methyl-2-pyrrolidinone

C.A.S. No

872-50-4

Regulation

Toxic Substances Control Act (TSCA) 6
Banned or Restricted Use Chemicals

Status

Proposed

15.2. State Regulations

Contact 3M for more information.

15.3. Chemical Inventories

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.

Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification

Health: 3 **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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