# Safety Data Sheet



This Safety Data Sheet has been prepared in accordance with the SS586 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods.

| | | | |
|---|---|---|---|
| **Document group:** | 08-1276-8 | **Version number:** | 3.00 |
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## SECTION 1: Identification

### 1.1. Product identifier
3M™ Zinc Spray 16-501

**Product Identification Numbers**
80-6109-2798-2 HB-0042-6018-6

### 1.2. Recommended use and restrictions on use

**Recommended use**
PROTECTIVE COATING, protective coating

**Restrictions on use**
INDUSTRIAL USE ONLY

### 1.3. Supplier's details
**Address:** 3M Technologies (S) Pte Ltd,10 Ang Mo Kio Street 65, Singapore 569059
**Telephone:** +65 6450 8888
**Website:** www.3m.com.sg

### 1.4. Emergency telephone number
+65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

## SECTION 2: Hazard identification

### 2.1. Classification of the substance or mixture
Aerosol: Category 1.
Serious Eye Damage/Irritation: Category 2.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (repeated exposure): Category 2.
Specific Target Organ Toxicity (single exposure): Category 3.
Acute Aquatic Toxicity: Category 1.
Chronic Aquatic Toxicity: Category 1.

### 2.2. Label elements
**SIGNAL WORD**

DANGER!

**Symbols**
Flame |Exclamation mark |Health Hazard | Environment |

**Pictograms**

**HAZARD STATEMENTS**

| | |
|---|---|
| H222 | Extremely flammable aerosol. |
| H229 | Pressurized container: may burst if heated. |
| H319 | Causes serious eye irritation. |
| H360 | May damage fertility or the unborn child. |
| H336 | May cause drowsiness or dizziness. |
| H370 | Causes damage to organs: cardiovascular system. |
| H373 | May cause damage to organs through prolonged or repeated exposure: nervous system \| sensory organs. |
| H410 | Very toxic to aquatic life with long lasting effects. |

**PRECAUTIONARY STATEMENTS**
**Prevention:**

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P211 | Do not spray on an open flame or other ignition source. |
| P251 | Do not pierce or burn, even after use. |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray. |
| P273 | Avoid release to the environment. |
| P280F | Wear respiratory protection. |

**Response:**

| | |
|---|---|
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313 | IF exposed or concerned: Get medical advice/attention. |
| P391 | Collect spillage. |

**Storage:**

| | |
|---|---|
| P410 + P412 | Protect from sunlight. Do not expose to temperatures exceeding 50C/122F. |

**2.3. Other hazards**
Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.

## SECTION 3: Composition/information on ingredients

This material is a mixture.

| Ingredient | CAS Nbr | % by Wt |
|---|---|---|
| Zinc | 7440-66-6 | 45 - 53 |
| Butane | 106-97-8 | 10 - 15 |

| | | |
|---|---|---|
| Propane | 74-98-6 | 10 - 15 |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | 8 - 13 |
| Heptane | 142-82-5 | 2 - 5 |
| Resin Epoxy Ester | 66070-75-5 | 1 - 5 |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | 2 - 5 |
| Toluene | 108-88-3 | 2 - 5 |

## SECTION 4: First aid measures

**4.1. Description of first aid measures**

**Inhalation**
Remove person to fresh air. Get medical attention.

**Skin contact**
Wash with soap and water. If signs/symptoms develop, get medical attention.

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

**If swallowed**
Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**
No critical symptoms or effects. See Section 11.1, information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**
Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

## SECTION 5: Fire-fighting measures

**5.1. Suitable extinguishing media**
In case of fire: Use a carbon dioxide or dry chemical extinguisher 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 | Condition |
|---|---|
| Carbon monoxide. | During combustion. |
| Carbon dioxide. | During combustion. |
| Oxides of Lead | During combustion. |
| Oxides of zinc. | 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.

## 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. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**
For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

**6.3. Methods and material for containment and cleaning up**
Contain spill. 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. 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 use in a confined area with minimal air exchange. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. 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. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (eg. gloves, respirators…) as required.

**7.2. Conditions for safe storage including any incompatibilities**
Store in a well-ventilated place. Keep container tightly closed. Protect from sunlight. Do not expose to temperatures exceeding 50C/122F. Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidising 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 | CAS Nbr | Agency | Limit type | Additional comments |
|---|---|---|---|---|
| Butane | 106-97-8 | ACGIH | STEL:1000 ppm | |
| Butane | 106-97-8 | Singapore PELs | TWA(8 hours):1900 mg/m3(800 ppm) | |
| Toluene | 108-88-3 | ACGIH | TWA:20 ppm | A4: Not class. as human carcin, Ototoxicant |
| Toluene | 108-88-3 | Singapore PELs | TWA(8 hours):188 mg/m3(50 ppm) | |
| Heptane | 142-82-5 | ACGIH | TWA:400 ppm;STEL:500 ppm | |
| Heptane | 142-82-5 | Singapore PELs | TWA(8 hours):1640 mg/m3(400 ppm);STEL(15 minutes):2050 mg/m3(500 ppm) | |
| Naphtha | 64742-89-8 | Singapore PELs | TWA(8 hours):1370 mg/m3(300 ppm) | |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | ACGIH | TWA:100 ppm | A3: Confirmed animal carcin., Danger of cutaneous absorption |
| Propane | 74-98-6 | ACGIH | Limit value not established: | asphyxiant |
| METHYL ETHYL KETONE | 78-93-3 | ACGIH | TWA:75 ppm;STEL:150 ppm | Danger of cutaneous |

| | | | | |
|---|---|---|---|---|
| (MEK) | | | | absorption |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Singapore PELs | TWA(8 hours):590 mg/m3(200 ppm);STEL(15 minutes):885 mg/m3(300 ppm) | |

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
Singapore PELs : Singapore. Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

**8.2. Exposure controls**

**8.2.1. Engineering controls**
Do not remain in area where available oxygen may be reduced. 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.

**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:
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

**Respiratory protection**

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

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. |
| **Specific Physical Form:** | Compressed gas. |
| **Color** | Gray |
| **Odor** | Hydrocarbon |
| **Odour threshold** | *No data available.* |
| **pH** | *Not applicable.* |

| | |
|---|---|
| **Melting point/Freezing point** | *Not applicable.* |
| **Boiling point/Initial boiling point/Boiling range** | -42.2 - 162.8 ºC |
| **Flash point** | -61.1 ºC [*Test Method:*Closed Cup] [*Details:*Based on butane] |
| **Evaporation rate** | >=1 [*Ref Std:*ETHER=1] |
| **Flammability** | Flammable Aerosol: Category 1. |
| **Flammable Limits(LEL)** | 0.9 % |
| **Flammable Limits(UEL)** | ± 10 % |
| **Vapour pressure** | *No data available.* |
| **Vapor Density and/or Relative Vapor Density** | *No data available.* |
| **Density** | 1,144 kg/l |
| **Relative density** | 1.15 [*Ref Std:*WATER=1] [*Details:*Reference standard: 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** | *No data available.* |
| **Volatile organic compounds (VOC)** | ± 52 g/l *No data available.* |
| **Percent volatile** | ± 88 % volume |
| **VOC less H2O & exempt solvents** | *No data available.* |

| | |
|---|---|
| **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 polymerisation will not occur.

**10.4 Conditions to avoid**
Heat.
Sparks and/or flames.

**10.5 Incompatible materials**
Strong acids.
Strong bases.
Strong oxidising agents.

**10.6 Hazardous decomposition products**

| Substance | Condition |
|---|---|
| Hydrocarbons. | Normal Use |
| Ketones. | Normal Use |
| Toxic vapour, gas, particulate. | Normal Use |

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 labelling, 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. Simple asphyxiation: Signs/symptoms may include increased heart rate, rapid respirations, drowsiness, headache, incoordination, altered judgement, nausea, vomiting, lethargy, seizures, coma, and may be fatal. 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.

**Eye contact**
Severe eye irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

**Ingestion**
May be harmful if swallowed.
Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea. 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. Single exposure, above recommended guidelines, may cause: Cardiac Sensitization: Signs/symptoms may include irregular heartbeat (arrhythmia), faintness, chest pain, and may be fatal.

**Prolonged or repeated exposure may cause target organ effects:**
Ocular effects: Signs/symptoms may include blurred or significantly impaired vision. Auditory effects: Signs/symptoms may include hearing impairment, balance dysfunction and ringing in the ears. Olfactory effects: Signs/symptoms may include decreased ability to detect odours and complete loss of smell. Neurological effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and changes in blood pressure and heart rate.

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

**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-Dust/Mist(4 hr) | | No data available; calculated ATE >5 - =12.5 mg/l |
| Overall product | Ingestion | | No data available; calculated ATE >5,000 mg/kg |
| Zinc | Dermal | Professional judgement | LD50 estimated to be > 5,000 mg/kg |
| Zinc | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 5.41 mg/l |
| Zinc | Ingestion | Rat | LD50 > 2,000 mg/kg |
| Propane | Inhalation-Gas (4 hours) | Rat | LC50 > 200,000 ppm |
| METHYL ETHYL KETONE (MEK) | Dermal | Rabbit | LD50 > 8,050 mg/kg |
| METHYL ETHYL KETONE (MEK) | Inhalation-Vapor (4 hours) | Rat | LC50 34.5 mg/l |
| METHYL ETHYL KETONE (MEK) | Ingestion | Rat | LD50 2,737 mg/kg |
| Butane | Inhalation-Gas (4 hours) | Rat | LC50 277,000 ppm |
| 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 |
| Heptane | Dermal | Rabbit | LD50 3,000 mg/kg |
| Heptane | Inhalation-Vapor (4 hours) | Rat | LC50 103 mg/l |
| Heptane | Ingestion | Rat | LD50 > 15,000 mg/kg |
| Solvent naphtha (petroleum), light aliphatic | Dermal | Rabbit | LD50 3,000 mg/kg |
| Solvent naphtha (petroleum), light aliphatic | Inhalation-Vapor (4 hours) | Rat | LC50 > 5.2 mg/l |
| Solvent naphtha (petroleum), light aliphatic | Ingestion | Rat | LD50 > 5,000 mg/kg |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name | Species | Value |
|---|---|---|
| Propane | Rabbit | Minimal irritation |
| METHYL ETHYL KETONE (MEK) | Rabbit | Minimal irritation |
| Butane | Professional judgement | No significant irritation |
| Toluene | Rabbit | Irritant |
| Heptane | Human | Mild irritant |
| Solvent naphtha (petroleum), light aliphatic | Rabbit | Irritant |

**Serious Eye Damage/Irritation**

| Name | Species | Value |
|---|---|---|
| Zinc | Rabbit | No significant irritation |
| Propane | Rabbit | Mild irritant |
| METHYL ETHYL KETONE (MEK) | Rabbit | Severe irritant |
| Butane | Rabbit | No significant irritation |
| Toluene | Rabbit | Moderate irritant |
| Heptane | Professional | Moderate irritant |

| | | |
|---|---|---|
| | judgement | |
| Solvent naphtha (petroleum), light aliphatic | Rabbit | No significant irritation |

**Sensitization:**

**Skin Sensitisation**

| Name | Species | Value |
|---|---|---|
| Toluene | Guinea pig | Not classified |

**Respiratory Sensitisation**

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

**Germ Cell Mutagenicity**

| Name | Route | Value |
|---|---|---|
| Propane | In Vitro | Not mutagenic |
| METHYL ETHYL KETONE (MEK) | In Vitro | Not mutagenic |
| Butane | In Vitro | Not mutagenic |
| Toluene | In Vitro | Not mutagenic |
| Toluene | In vivo | Not mutagenic |
| Heptane | In Vitro | Not mutagenic |
| Solvent naphtha (petroleum), light aliphatic | In Vitro | Not mutagenic |

**Carcinogenicity**

| Name | Route | Species | Value |
|---|---|---|---|
| METHYL ETHYL KETONE (MEK) | Inhalation | Human | 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 |
| Solvent naphtha (petroleum), light aliphatic | Dermal | 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 (MEK) | Inhalation | Not classified for development | Rat | LOAEL 8.8 mg/l | during gestation |
| 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 |
|---|---|---|---|---|---|---|
| Propane | Inhalation | cardiac sensitization | Causes damage to organs | Human | NOAEL Not available | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Propane | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | |
| Propane | Inhalation | respiratory irritation | Not classified | Human | NOAEL Not available | |
| METHYL ETHYL KETONE (MEK) | Inhalation | central nervous system depression | May cause drowsiness or dizziness | official classification | NOAEL Not available | |
| METHYL ETHYL KETONE (MEK) | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | Human | NOAEL Not available | |
| METHYL ETHYL KETONE (MEK) | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Professional judgement | NOAEL Not available | |
| METHYL ETHYL KETONE (MEK) | Ingestion | liver | Not classified | Rat | NOAEL Not available | not applicable |
| METHYL ETHYL KETONE (MEK) | Ingestion | kidney and/or bladder | Not classified | Rat | LOAEL 1,080 mg/kg | not applicable |
| Butane | Inhalation | cardiac sensitization | Causes damage to organs | Human | NOAEL Not available | |
| Butane | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human and animal | NOAEL Not available | |
| Butane | Inhalation | heart | Not classified | Dog | NOAEL 5,000 ppm | 25 minutes |
| Butane | Inhalation | respiratory irritation | Not classified | Rabbit | NOAEL 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 |
| Heptane | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | |
| Heptane | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | Human | NOAEL Not available | |
| Heptane | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | |
| Solvent naphtha (petroleum), light aliphatic | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human and animal | NOAEL Not available | |
| Solvent naphtha (petroleum), light aliphatic | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | | NOAEL Not available | |
| Solvent naphtha (petroleum), light aliphatic | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Professional judgement | NOAEL Not available | |

**Specific Target Organ Toxicity - repeated exposure**

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

| | | | | | | |
|---|---|---|---|---|---|---|
| | | system \| muscles | | | | |
| METHYL ETHYL KETONE (MEK) | Ingestion | liver | Not classified | Rat | NOAEL Not available | 7 days |
| METHYL ETHYL KETONE (MEK) | Ingestion | nervous system | Not classified | Rat | NOAEL 173 mg/kg/day | 90 days |
| Butane | Inhalation | kidney and/or bladder \| blood | Not classified | Rat | NOAEL 4,489 ppm | 90 days |
| Toluene | Inhalation | auditory system \| nervous system \| eyes \| 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 \| liver \| 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 \| 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 \| 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 |
| Heptane | Inhalation | liver \| nervous system \| kidney and/or bladder | Not classified | Rat | NOAEL 12 mg/l | 26 weeks |

**Aspiration Hazard**

| Name | Value |
|---|---|
| Toluene | Aspiration hazard |
| Heptane | Aspiration hazard |
| Solvent naphtha (petroleum), light aliphatic | 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

**The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.**

### 12.1. Toxicity

**Chronic aquatic hazard:**
GHS Chronic 1: Very toxic to aquatic life with long lasting effects.

No product test data available.

| Material | CAS Nbr | Organism | Type | Exposure | Test endpoint | Test result |
|---|---|---|---|---|---|---|
| Zinc | 7440-66-6 | Bacteria | Estimated | 30 minutes | EC10 | 0.3 mg/l |
| Zinc | 7440-66-6 | Green algae | Estimated | 72 hours | EC50 | 0.042 mg/l |
| Zinc | 7440-66-6 | Rainbow trout | Estimated | 96 hours | LC50 | 0.169 mg/l |
| Zinc | 7440-66-6 | Water flea | Estimated | 48 hours | EC50 | 0.06 mg/l |
| Zinc | 7440-66-6 | Green algae | Estimated | 72 hours | NOEC | 0.005 mg/l |
| Zinc | 7440-66-6 | Water flea | Estimated | 7 days | NOEC | 0.013 mg/l |
| Butane | 106-97-8 | N/A | Data not available or insufficient for classification | N/A | N/A | N/A |
| Propane | 74-98-6 | N/A | Data not available or insufficient for classification | N/A | N/A | N/A |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Fathead minnow | Experimental | 96 hours | LC50 | 2,993 mg/l |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Green algae | Experimental | 96 hours | ErC50 | 2,029 mg/l |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Water flea | Experimental | 48 hours | EC50 | 308 mg/l |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Green algae | Experimental | 96 hours | ErC10 | 1,289 mg/l |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Water flea | Experimental | 21 days | NOEC | 100 mg/l |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Bacteria | Experimental | 16 hours | LOEC | 1,150 mg/l |
| Heptane | 142-82-5 | Water flea | Experimental | 48 hours | EC50 | 1.5 mg/l |
| Heptane | 142-82-5 | Water flea | Estimated | 21 days | NOEC | 0.17 mg/l |
| Resin Epoxy Ester | 66070-75-5 | N/A | Data not available or insufficient for classification | N/A | N/A | n/a |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Fathead minnow | Analogous Compound | 96 hours | LL50 | 4.1 mg/l |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Water flea | Analogous Compound | 48 hours | EL50 | 4.5 mg/l |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Green algae | Experimental | 72 hours | EL50 | 11 mg/l |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Water flea | Analogous Compound | 21 days | NOEL | 2.6 mg/l |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Green algae | Experimental | 72 hours | NOEL | 0.1 mg/l |
| Toluene | 108-88-3 | Coho Salmon | Experimental | 96 hours | LC50 | 5.5 mg/l |
| Toluene | 108-88-3 | Grass Shrimp | Experimental | 96 hours | LC50 | 9.5 mg/l |
| Toluene | 108-88-3 | Green algae | Experimental | 72 hours | EC50 | 12.5 mg/l |
| Toluene | 108-88-3 | Leopard frog | Experimental | 9 days | LC50 | 0.39 mg/l |
| Toluene | 108-88-3 | Pink Salmon | Experimental | 96 hours | LC50 | 6.41 mg/l |
| Toluene | 108-88-3 | Water flea | Experimental | 48 hours | EC50 | 3.78 mg/l |
| Toluene | 108-88-3 | Coho Salmon | Experimental | 40 days | NOEC | 1.39 mg/l |
| Toluene | 108-88-3 | Diatom | Experimental | 72 hours | NOEC | 10 mg/l |
| Toluene | 108-88-3 | Water flea | Experimental | 7 days | NOEC | 0.74 mg/l |
| Toluene | 108-88-3 | Activated sludge | Experimental | 12 hours | IC50 | 292 mg/l |
| Toluene | 108-88-3 | Bacteria | Experimental | 16 hours | NOEC | 29 mg/l |
| Toluene | 108-88-3 | Bacteria | Experimental | 24 hours | EC50 | 84 mg/l |
| Toluene | 108-88-3 | Redworm | Experimental | 28 days | LC50 | >150 mg per kg of |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | bodyweight |
| Toluene | 108-88-3 | Soil microbes | Experimental | 28 days | NOEC | <26 mg/kg (Dry Weight) |

### 12.2. Persistence and degradability

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|---|---|---|---|---|---|---|
| Zinc | 7440-66-6 | Data not available-insufficient | N/A | N/A | N/A | N/A |
| Butane | 106-97-8 | Experimental Photolysis | | Photolytic half-life (in air) | 12.3 days (t 1/2) | |
| Propane | 74-98-6 | Experimental Photolysis | | Photolytic half-life (in air) | 27.5 days (t 1/2) | |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Experimental Biodegradation | 28 days | BOD | 98 %BOD/ThOD | OECD 301D - Closed bottle test |
| Heptane | 142-82-5 | Experimental Biodegradation | 28 days | BOD | 101 %BOD/ThOD | OECD 301C - MITI test (I) |
| Heptane | 142-82-5 | Experimental Photolysis | | Photolytic half-life (in air) | 4.24 days (t 1/2) | |
| Resin Epoxy Ester | 66070-75-5 | Data not available-insufficient | N/A | N/A | N/A | N/A |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Analogous Compound Biodegradation | 28 days | BOD | 77.05 %BOD/ThOD | OECD 301F - Manometric respirometry |
| Toluene | 108-88-3 | Experimental Biodegradation | 20 days | BOD | 80 %BOD/ThOD | APHA Std Meth Water/Wastewater |
| Toluene | 108-88-3 | Experimental Photolysis | | Photolytic half-life (in air) | 5.2 days (t 1/2) | |

### 12.3 : Bioaccumulative potential

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|---|---|---|---|---|---|---|
| Zinc | 7440-66-6 | Estimated BCF - Fish | 56 days | Bioaccumulation factor | 242 | |
| Butane | 106-97-8 | Experimental Bioconcentration | | Log Kow | 2.89 | |
| Propane | 74-98-6 | Experimental Bioconcentration | | Log Kow | 2.36 | |
| METHYL ETHYL KETONE (MEK) | 78-93-3 | Experimental Bioconcentration | | Log Kow | 0.3 | OECD 117 log Kow HPLC method |
| Heptane | 142-82-5 | Estimated Bioconcentration | | Bioaccumulation factor | 105 | |
| Resin Epoxy Ester | 66070-75-5 | Data not available or insufficient for classification | N/A | N/A | N/A | N/A |
| Solvent naphtha (petroleum), light aliphatic | 64742-89-8 | Data not available or insufficient for classification | N/A | N/A | N/A | N/A |
| Toluene | 108-88-3 | Experimental BCF - Other | 72 hours | Bioaccumulation factor | 90 | |
| Toluene | 108-88-3 | Experimental Bioconcentration | | Log Kow | 2.73 | |

### 12.4. Mobility in soil
Please contact manufacturer for more details

### 12.5 Other adverse effects
No information available.

## SECTION 13: Disposal considerations

**13.1. Disposal methods**
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Incinerate in a permitted waste incineration facility. 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

**International Regulations**

**UN No.:** UN1950
**UN Proper shipping name:** AEROSOLS

**Transportation Class (IMO):** 2.1-2.1 Flammable gases
**Transportation Class (IATA):** 2.1-2.1 Flammable gases
**Other Dangerous Goods Descriptions (IMO):** None assigned
**Other Dangerous Goods Descriptions (IATA):** None assigned
**Packing Group:** None assigned
**Marine pollutant:** None assigned

## SECTION 15: Regulatory information

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

**Global inventory status**
Contact 3M for more information. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. 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.

**This product may contain component(s) that are regulated by the following:**
Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations: this product is subject to SDS, labelling, PEL and other requirements in the Act/Regulations.
Fire Safety (Petroleum and Flammable Materials) Regulations: This product is subject to the requirements in the Regulations
Sewerage & Drainage Act and Sewerage and Drainage (Trade Effluent) Regulations: This product is subject to the requirements in the act/regulation.
Misuse of Drug Act: This product is subject to the requirements of the Act.

## SECTION 16: Other information

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

**3M Singapore SDSs are available at www.3m.com.sg**