# Safety Data Sheet



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|---|---|---|---|
| **Document Group:** | 33-2559-4 | **Version Number:** | 2.02 |
| **Issue Date:** | 04/25/18 | **Supercedes Date:** | 01/19/18 |

## SECTION 1: Identification

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

**Product Identification Numbers**
62-5570-0031-2, 62-5570-0036-1, 62-5570-0251-6, 62-5570-0256-5, 70-0075-1716-5

**1.2. Recommended use and restrictions on use**

**Recommended use**
Primer

**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

The label elements below were prepared in accordance with OSHA Hazard Communication Standard, 29 CFR 1910.1200. This information may be different from the actual product label information for labels regulated by other agencies.

**2.1. Hazard classification**
Flammable Liquid: Category 2.
Serious Eye Damage/Irritation: Category 2A.
Skin Corrosion/Irritation: Category 2.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1.
Carcinogenicity: Category 2.
Specific Target Organ Toxicity (single exposure): Category 2.
Specific Target Organ Toxicity (single exposure): Category 3.
Specific Target Organ Toxicity (repeated exposure): Category 1.

**2.2. Label elements**

**Signal word**
Danger

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

**Pictograms**

**Hazard Statements**
Highly flammable liquid and vapor.

Causes serious eye irritation.
Causes skin irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause drowsiness or dizziness.
Suspected of causing cancer.

May cause damage to organs:
respiratory system |

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

**Precautionary Statements**

**Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Keep container tightly closed.
Use explosion-proof electrical/ventilating/lighting equipment.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
In case of inadequate ventilation wear respiratory protection.
Wear protective gloves and eye/face protection.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.

**Response:**
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
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.
Keep container tightly closed.
Store locked up.

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

3% of the mixture consists of ingredients of unknown acute oral toxicity.
3% of the mixture consists of ingredients of unknown acute dermal toxicity.
14% 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 | 40 - 60 Trade Secret * |
| N-Butyl Acetate | 123-86-4 | 10 - 30 Trade Secret * |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | 63368-95-6 | 5 - 10 Trade Secret * |
| Polymethylene Polyphenylene Isocyanate | 9016-87-9 | 5 - 10 Trade Secret * |
| 1-methoxy-2-propyl acetate | 108-65-6 | 1 - 5 Trade Secret * |
| 3-(trimethoxysilyl)propyl glycidyl ether | 2530-83-8 | 1 - 5 Trade Secret * |
| Carbon Black | 1333-86-4 | 1 - 5 Trade Secret * |
| Diphenylmethane-2,4'-diisocyanate | 5873-54-1 | 1 - 5 Trade Secret * |
| Hexamethylene diisocyanate polymer | 28182-81-2 | 1 - 5 Trade Secret * |
| P,P'-Methylenebis(phenyl isocyanate) | 101-68-8 | 1 - 5 Trade Secret * |
| Alkyl Isocyanate Silane | Trade Secret* | 1 - 5 Trade Secret * |
| Polyurethane Resin | Trade Secret* | 1 - 5 Trade Secret * |
| P-Toluenesulfonamide | 70-55-3 | < 1.5 Trade Secret * |
| Dibutyltin dichloride | 683-18-1 | < 0.1 Trade Secret * |
| Hexamethylene diisocyanate | 822-06-0 | < 0.06 Trade Secret * |
| Toluene 2,4-diisocyanate | 584-84-9 | < 0.06 Trade Secret * |

*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. 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**
See Section 11.1. Information on toxicological effects.

**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 | Condition |
|---|---|
| Hydrocarbons | During Combustion |
| Carbon monoxide | During Combustion |
| Carbon dioxide | During Combustion |
| Hydrogen Cyanide | During Combustion |
| Oxides of Nitrogen | During Combustion |
| Oxides of Sulfur | During Combustion |

**5.3. 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**
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. Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible using non-sparking tools. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. Place in a metal container approved for transportation by appropriate authorities. Clean up residue with detergent and water. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

# SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

For industrial or professional use only. 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 to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidizing agents. Store away from amines.

# 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 |
|---|---|---|---|---|
| P,P'-Methylenebis(phenyl isocyanate) | 101-68-8 | ACGIH | TWA:0.005 ppm | |
| P,P'-Methylenebis(phenyl isocyanate) | 101-68-8 | OSHA | CEIL:0.2 mg/m3(0.02 ppm) | |
| 1-methoxy-2-propyl acetate | 108-65-6 | AIHA | TWA:50 ppm | |
| N-Butyl Acetate | 123-86-4 | ACGIH | TWA:50 ppm;STEL:150 ppm | |
| N-Butyl Acetate | 123-86-4 | OSHA | TWA:710 mg/m3(150 ppm) | |
| Carbon Black | 1333-86-4 | ACGIH | TWA(inhalable fraction):3 mg/m3 | A3: Confirmed animal carcin. |
| Carbon Black | 1333-86-4 | OSHA | TWA:3.5 mg/m3 | |
| Toluene 2,4-diisocyanate | 584-84-9 | ACGIH | TWA(inhalable fraction and vapor):0.001 ppm;STEL(inhalable fraction and vapor):0.005 ppm | A3: Confirmed animal carcin., SKIN; Resp+Dermal sensitizer |
| Toluene 2,4-diisocyanate | 584-84-9 | OSHA | CEIL:0.14 mg/m3(0.02 ppm) | |
| TIN, ORGANIC COMPOUNDS | 683-18-1 | ACGIH | TWA(as Sn):0.1 mg/m3;STEL(as Sn):0.2 mg/m3 | SKIN, A4: Not class. as human carcin |
| TIN, ORGANIC COMPOUNDS | 683-18-1 | OSHA | TWA(as Sn):0.1 mg/m3 | |
| Methyl Ethyl Ketone | 78-93-3 | ACGIH | TWA:200 ppm;STEL:300 ppm | |
| Methyl Ethyl Ketone | 78-93-3 | OSHA | TWA:590 mg/m3(200 ppm) | |
| Hexamethylene diisocyanate | 822-06-0 | ACGIH | TWA:0.005 ppm | |

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:
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: Butyl Rubber
Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron – Butyl rubber
Apron - 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 vapors and particulates

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**

| | |
|---|---|
| **General Physical Form:** | Liquid |
| **Odor, Color, Grade:** | Ketone like odor black liquid |
| **Odor threshold** | *No Data Available* |
| **pH** | *Not Applicable* |
| **Melting point** | *Not Applicable* |
| **Boiling Point** | 79 ºC |
| **Flash Point** | -8 ºC [*Test Method:*Closed Cup] |
| **Evaporation rate** | *No Data Available* |
| **Flammability (solid, gas)** | Not Applicable |
| **Flammable Limits(LEL)** | 1.8 % volume |
| **Flammable Limits(UEL)** | 11.5 % volume |
| **Vapor Pressure** | *No Data Available* |

| | |
|---|---|
| **Vapor Density** | 2.8 [*Ref Std:*AIR=1] |
| **Density** | 0.9 g/ml |
| **Specific Gravity** | 0.9 [*Ref Std:*WATER=1] |
| **Solubility in Water** | Moderate |
| **Solubility- non-water** | *No Data Available* |
| **Partition coefficient: n-octanol/ water** | *No Data Available* |
| **Autoignition temperature** | > 200 ºC |
| **Decomposition temperature** | *No Data Available* |
| **Viscosity** | 10 mPa-s |
| **Hazardous Air Pollutants** | 0.1 % weight |
| **VOC Less H2O & Exempt Solvents** | 602 g/l [*Test Method:*calculated SCAQMD rule 443.1] |

## SECTION 10: Stability and reactivity

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

**10.2. Chemical stability**
Stable.

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

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

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

**10.6. Hazardous decomposition products**

| **Substance** | **Condition** |
|---|---|
| None known. | |

Refer to section 5.2 for hazardous decomposition products during combustion.

## SECTION 11: Toxicological information

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

**11.1. Information on Toxicological effects**

**Signs and Symptoms of Exposure**

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

**Inhalation:**
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.

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

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

May cause additional health effects (see below).

**Additional Health Effects:**

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

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

**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 colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

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

| Ingredient | CAS No. | Class Description | Regulation |
|---|---|---|---|
| Generic: Benzene, 1,3-diisocyanatomethyl- | 584-84-9 | Anticipated human carcinogen | National Toxicology Program Carcinogens |
| Carbon Black | 1333-86-4 | Grp. 2B: Possible human carc. | International Agency for Research on Cancer |
| Toluene 2,4-diisocyanate | 584-84-9 | Grp. 2B: Possible human carc. | International Agency for Research on Cancer |

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

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

**Acute Toxicity**

| Name | Route | Species | Value |
|---|---|---|---|
| Overall product | Dermal | | No data available; calculated ATE >5,000 mg/kg |
| Overall product | Inhalation-Vapor(4 hr) | | No data available; calculated ATE20 - 50 mg/l |

| | | | |
|---|---|---|---|
| Overall product | Ingestion | | No data available; calculated ATE >5,000 mg/kg |
| Methyl Ethyl Ketone | Dermal | Rabbit | LD50 > 8,050 mg/kg |
| Methyl Ethyl Ketone | Inhalation-Vapor (4 hours) | Rat | LC50 34.5 mg/l |
| Methyl Ethyl Ketone | Ingestion | Rat | LD50 2,737 mg/kg |
| N-Butyl Acetate | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| N-Butyl Acetate | Inhalation-Dust/Mist (4 hours) | Rat | LC50 1.4 mg/l |
| N-Butyl Acetate | Inhalation-Vapor (4 hours) | Rat | LC50 > 20 mg/l |
| N-Butyl Acetate | Ingestion | Rat | LD50 > 8,800 mg/kg |
| Polymethylene Polyphenylene Isocyanate | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| Polymethylene Polyphenylene Isocyanate | Inhalation-Dust/Mist (4 hours) | Rat | LC50 0.368 mg/l |
| Polymethylene Polyphenylene Isocyanate | Ingestion | Rat | LD50 31,600 mg/kg |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Dermal | | LD50 estimated to be > 5,000 mg/kg |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 3 mg/l |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Ingestion | Rat | LD50 > 5,000 mg/kg |
| Carbon Black | Dermal | Rabbit | LD50 > 3,000 mg/kg |
| Carbon Black | Ingestion | Rat | LD50 > 8,000 mg/kg |
| Diphenylmethane-2,4'-diisocyanate | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| Diphenylmethane-2,4'-diisocyanate | Inhalation-Dust/Mist (4 hours) | Rat | LC50 0.368 mg/l |
| Diphenylmethane-2,4'-diisocyanate | Ingestion | Rat | LD50 31,600 mg/kg |
| Polyurethane Resin | Dermal | | LD50 estimated to be > 5,000 mg/kg |
| Polyurethane Resin | Ingestion | | LD50 estimated to be 2,000 - 5,000 mg/kg |
| P,P'-Methylenebis(phenyl isocyanate) | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| P,P'-Methylenebis(phenyl isocyanate) | Inhalation-Dust/Mist (4 hours) | Rat | LC50 0.368 mg/l |
| P,P'-Methylenebis(phenyl isocyanate) | Ingestion | Rat | LD50 31,600 mg/kg |
| 3-(trimethoxysilyl)propyl glycidyl ether | Dermal | Rabbit | LD50 4,000 mg/kg |
| 3-(trimethoxysilyl)propyl glycidyl ether | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 5.3 mg/l |
| 3-(trimethoxysilyl)propyl glycidyl ether | Ingestion | Rat | LD50 7,010 mg/kg |
| Hexamethylene diisocyanate polymer | Inhalation-Dust/Mist (4 hours) | Professional judgement | LC50 estimated to be 1 - 5 mg/l |
| Hexamethylene diisocyanate polymer | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| Hexamethylene diisocyanate polymer | Ingestion | Rat | LD50 > 5,000 mg/kg |
| P-Toluenesulfonamide | Dermal | | LD50 estimated to be 2,000 - 5,000 mg/kg |
| P-Toluenesulfonamide | Ingestion | Rat | LD50 > 2,000 mg/kg |
| 1-methoxy-2-propyl acetate | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| 1-methoxy-2-propyl acetate | Inhalation-Vapor (4 hours) | Rat | LC50 > 28.8 mg/l |
| 1-methoxy-2-propyl acetate | Ingestion | Rat | LD50 8,532 mg/kg |
| Toluene 2,4-diisocyanate | Inhalation-Vapor (4 hours) | Mouse | LC50 0.12 mg/l |
| Toluene 2,4-diisocyanate | Dermal | Rabbit | LD50 > 9,400 mg/kg |
| Toluene 2,4-diisocyanate | Inhalation-Dust/Mist (4 hours) | Rat | LC50 0.35 mg/l |
| Toluene 2,4-diisocyanate | Ingestion | Rat | LD50 > 5,000 mg/kg |
| Hexamethylene diisocyanate | Dermal | Rabbit | LD50 570 mg/kg |

| | | | |
|---|---|---|---|
| Hexamethylene diisocyanate | Inhalation-Dust/Mist (4 hours) | Rat | LC50 0.12 mg/l |
| Hexamethylene diisocyanate | Ingestion | Rat | LD50 710 mg/kg |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name | Species | Value |
|---|---|---|
| Methyl Ethyl Ketone | Rabbit | Minimal irritation |
| N-Butyl Acetate | Rabbit | Minimal irritation |
| Polymethylene Polyphenylene Isocyanate | official classification | Irritant |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Rabbit | Minimal irritation |
| Carbon Black | Rabbit | No significant irritation |
| Diphenylmethane-2,4'-diisocyanate | official classification | Irritant |
| P,P'-Methylenebis(phenyl isocyanate) | official classification | Irritant |
| 3-(trimethoxysilyl)propyl glycidyl ether | Rabbit | Mild irritant |
| Hexamethylene diisocyanate polymer | Rabbit | Mild irritant |
| P-Toluenesulfonamide | Rabbit | No significant irritation |
| 1-methoxy-2-propyl acetate | Rabbit | No significant irritation |
| Toluene 2,4-diisocyanate | Rabbit | Irritant |
| Hexamethylene diisocyanate | Rabbit | Corrosive |

**Serious Eye Damage/Irritation**

| Name | Species | Value |
|---|---|---|
| Methyl Ethyl Ketone | Rabbit | Severe irritant |
| N-Butyl Acetate | Rabbit | Moderate irritant |
| Polymethylene Polyphenylene Isocyanate | official classification | Severe irritant |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Rabbit | Moderate irritant |
| Carbon Black | Rabbit | No significant irritation |
| Diphenylmethane-2,4'-diisocyanate | official classification | Severe irritant |
| P,P'-Methylenebis(phenyl isocyanate) | official classification | Severe irritant |
| 3-(trimethoxysilyl)propyl glycidyl ether | Rabbit | Corrosive |
| Hexamethylene diisocyanate polymer | Rabbit | Mild irritant |
| P-Toluenesulfonamide | Rabbit | No significant irritation |
| 1-methoxy-2-propyl acetate | Rabbit | Mild irritant |
| Toluene 2,4-diisocyanate | Rabbit | Corrosive |
| Hexamethylene diisocyanate | Rabbit | Corrosive |

**Skin Sensitization**

| Name | Species | Value |
|---|---|---|
| N-Butyl Acetate | Multiple animal species | Not classified |
| Polymethylene Polyphenylene Isocyanate | official classification | Sensitizing |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Guinea pig | Sensitizing |
| Diphenylmethane-2,4'-diisocyanate | official classification | Sensitizing |

| | | |
|---|---|---|
| P,P'-Methylenebis(phenyl isocyanate) | official classification | Sensitizing |
| 3-(trimethoxysilyl)propyl glycidyl ether | Guinea pig | Not classified |
| Hexamethylene diisocyanate polymer | Guinea pig | Sensitizing |
| 1-methoxy-2-propyl acetate | Guinea pig | Not classified |
| Toluene 2,4-diisocyanate | Human and animal | Sensitizing |
| Hexamethylene diisocyanate | Multiple animal species | Sensitizing |

## Respiratory Sensitization

| Name | Species | Value |
|---|---|---|
| Polymethylene Polyphenylene Isocyanate | Human | Sensitizing |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | | Sensitizing |
| Diphenylmethane-2,4'-diisocyanate | Human | Sensitizing |
| P,P'-Methylenebis(phenyl isocyanate) | Human | Sensitizing |
| Hexamethylene diisocyanate polymer | similar compounds | Not classified |
| Toluene 2,4-diisocyanate | Human | Sensitizing |
| Hexamethylene diisocyanate | Human and animal | Sensitizing |

## Germ Cell Mutagenicity

| Name | Route | Value |
|---|---|---|
| Methyl Ethyl Ketone | In Vitro | Not mutagenic |
| N-Butyl Acetate | In Vitro | Not mutagenic |
| Polymethylene Polyphenylene Isocyanate | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Carbon Black | In Vitro | Not mutagenic |
| Carbon Black | In vivo | Some positive data exist, but the data are not sufficient for classification |
| Diphenylmethane-2,4'-diisocyanate | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| P,P'-Methylenebis(phenyl isocyanate) | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| 3-(trimethoxysilyl)propyl glycidyl ether | In vivo | Not mutagenic |
| 3-(trimethoxysilyl)propyl glycidyl ether | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Hexamethylene diisocyanate polymer | In Vitro | Not mutagenic |
| Hexamethylene diisocyanate polymer | In vivo | Not mutagenic |
| 1-methoxy-2-propyl acetate | In Vitro | Not mutagenic |
| Toluene 2,4-diisocyanate | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Hexamethylene diisocyanate | In Vitro | Not mutagenic |
| Hexamethylene diisocyanate | In vivo | Not mutagenic |

## Carcinogenicity

| Name | Route | Species | Value |
|---|---|---|---|
| Methyl Ethyl Ketone | Inhalation | Human | Not carcinogenic |
| Polymethylene Polyphenylene Isocyanate | Inhalation | Rat | Some positive data exist, but the data are not sufficient for classification |
| Carbon Black | Dermal | Mouse | Not carcinogenic |
| Carbon Black | Ingestion | Mouse | Not carcinogenic |
| Carbon Black | Inhalation | Rat | Carcinogenic |

| | | | |
|---|---|---|---|
| Diphenylmethane-2,4'-diisocyanate | Inhalation | Rat | Some positive data exist, but the data are not sufficient for classification |
| P,P'-Methylenebis(phenyl isocyanate) | Inhalation | Rat | Some positive data exist, but the data are not sufficient for classification |
| 3-(trimethoxysilyl)propyl glycidyl ether | Dermal | Mouse | Not carcinogenic |
| Toluene 2,4-diisocyanate | Inhalation | Human and animal | Not carcinogenic |
| Toluene 2,4-diisocyanate | Ingestion | Multiple animal species | Carcinogenic |
| Hexamethylene diisocyanate | Inhalation | Rat | Not carcinogenic |

## Reproductive Toxicity

## Reproductive and/or Developmental Effects

| Name | Route | Value | Species | Test Result | Exposure Duration |
|---|---|---|---|---|---|
| Methyl Ethyl Ketone | Inhalation | Not classified for development | Rat | LOAEL 8.8 mg/l | during gestation |
| N-Butyl Acetate | Inhalation | Not classified for female reproduction | Rat | NOAEL 7.1 mg/l | premating & during gestation |
| N-Butyl Acetate | Inhalation | Not classified for development | Rat | NOAEL 7.1 mg/l | premating & during gestation |
| Polymethylene Polyphenylene Isocyanate | Inhalation | Not classified for development | Rat | NOAEL 0.004 mg/l | during organogenesis |
| Diphenylmethane-2,4'-diisocyanate | Inhalation | Not classified for development | Rat | NOAEL 0.004 mg/l | during organogenesis |
| P,P'-Methylenebis(phenyl isocyanate) | Inhalation | Not classified for development | Rat | NOAEL 0.004 mg/l | during organogenesis |
| 3-(trimethoxysilyl)propyl glycidyl ether | Ingestion | Not classified for female reproduction | Rat | NOAEL 1,000 mg/kg/day | 1 generation |
| 3-(trimethoxysilyl)propyl glycidyl ether | Ingestion | Not classified for male reproduction | Rat | NOAEL 1,000 mg/kg/day | 1 generation |
| 3-(trimethoxysilyl)propyl glycidyl ether | Ingestion | Not classified for development | Rat | NOAEL 3,000 mg/kg/day | during organogenesis |
| P-Toluenesulfonamide | Ingestion | Not classified for reproduction and/or development | Rat | NOAEL 300 mg/kg/day | premating & during gestation |
| 1-methoxy-2-propyl acetate | Ingestion | Not classified for female reproduction | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |
| 1-methoxy-2-propyl acetate | Ingestion | Not classified for male reproduction | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |
| 1-methoxy-2-propyl acetate | Ingestion | Not classified for development | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |
| 1-methoxy-2-propyl acetate | Inhalation | Not classified for development | Rat | NOAEL 21.6 mg/l | during organogenesis |
| Toluene 2,4-diisocyanate | Inhalation | Not classified for female reproduction | Rat | NOAEL 0.002 mg/l | 2 generation |
| Toluene 2,4-diisocyanate | Inhalation | Not classified for male reproduction | Rat | NOAEL 0.002 mg/l | 2 generation |
| Toluene 2,4-diisocyanate | Inhalation | Not classified for development | Rat | NOAEL 0.004 mg/l | during organogenesis |
| Hexamethylene diisocyanate | Inhalation | Not classified for female reproduction | Rat | NOAEL 0.002 mg/l | 7 weeks |
| Hexamethylene diisocyanate | Inhalation | Not classified for development | Rat | NOAEL 0.002 | 7 weeks |

| | | | | | |
|---|---|---|---|---|---|
| | | | | mg/l | |
| Hexamethylene diisocyanate | Inhalation | Not classified for male reproduction | Rat | NOAEL 0.014 mg/l | 4 weeks |

## 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 classification | Human | NOAEL Not available | |
| Methyl Ethyl Ketone | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Professional judgement | NOAEL Not available | |
| Methyl Ethyl Ketone | Ingestion | liver | Not classified | Rat | NOAEL Not available | not applicable |
| Methyl Ethyl Ketone | Ingestion | kidney and/or bladder | Not classified | Rat | LOAEL 1,080 mg/kg | not applicable |
| N-Butyl Acetate | Inhalation | respiratory system | May cause damage to organs | Rat | LOAEL 2.6 mg/l | 4 hours |
| N-Butyl Acetate | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | not available |
| N-Butyl Acetate | Inhalation | respiratory irritation | May cause respiratory irritation | Human | NOAEL Not available | not available |
| N-Butyl Acetate | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Professional judgement | NOAEL Not available | |
| Polymethylene Polyphenylene Isocyanate | Inhalation | respiratory irritation | May cause respiratory irritation | official classification | NOAEL Not available | |
| 1,6-Hexamethylene diisocyanate-TDI copolymer | Inhalation | respiratory irritation | May cause respiratory irritation | | NOAEL Not available | |
| Diphenylmethane-2,4'-diisocyanate | Inhalation | respiratory irritation | May cause respiratory irritation | official classification | NOAEL Not available | |
| P,P'-Methylenebis(phenyl isocyanate) | Inhalation | respiratory irritation | May cause respiratory irritation | official classification | NOAEL Not available | |
| Hexamethylene diisocyanate polymer | Inhalation | respiratory irritation | May cause respiratory irritation | | NOAEL Not available | |
| 1-methoxy-2-propyl acetate | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | | NOAEL Not available | |
| Toluene 2,4-diisocyanate | Inhalation | respiratory irritation | May cause respiratory irritation | Human | NOAEL Not available | occupational exposure |
| Hexamethylene diisocyanate | Inhalation | respiratory irritation | May cause respiratory irritation | Human and animal | NOAEL Not available | |
| Hexamethylene diisocyanate | Inhalation | blood | Not classified | Human | NOAEL Not available | occupational exposure |

### 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 \| kidney and/or bladder \| heart \| endocrine system \| | Not classified | Rat | NOAEL 14.7 mg/l | 90 days |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | gastrointestinal tract \| bone, teeth, nails, and/or hair \| hematopoietic system \| immune system \| muscles | | | | |
| Methyl Ethyl Ketone | Ingestion | liver | Not classified | Rat | NOAEL Not available | 7 days |
| Methyl Ethyl Ketone | Ingestion | nervous system | Not classified | Rat | NOAEL 173 mg/kg/day | 90 days |
| N-Butyl Acetate | Inhalation | olfactory system | Not classified | Rat | NOAEL 2.4 mg/l | 14 weeks |
| N-Butyl Acetate | Inhalation | liver \| kidney and/or bladder | Not classified | Rabbit | NOAEL 7.26 mg/l | 13 days |
| Polymethylene Polyphenylene Isocyanate | Inhalation | respiratory system | Causes damage to organs through prolonged or repeated exposure | Rat | LOAEL 0.004 mg/l | 13 weeks |
| Carbon Black | Inhalation | pneumoconiosis | Not classified | Human | NOAEL Not available | occupational exposure |
| Diphenylmethane-2,4'-diisocyanate | Inhalation | respiratory system | Causes damage to organs through prolonged or repeated exposure | Rat | LOAEL 0.004 mg/l | 13 weeks |
| P,P'-Methylenebis(phenyl isocyanate) | Inhalation | respiratory system | Causes damage to organs through prolonged or repeated exposure | Rat | LOAEL 0.004 mg/l | 13 weeks |
| 3-(trimethoxysilyl)propyl glycidyl ether | Ingestion | heart \| endocrine system \| bone, teeth, nails, and/or hair \| hematopoietic system \| liver \| immune system \| nervous system \| kidney and/or bladder \| respiratory system | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 days |
| Hexamethylene diisocyanate polymer | Inhalation | immune system \| blood | Not classified | Rat | NOAEL 0.084 mg/l | 2 weeks |
| 1-methoxy-2-propyl acetate | Inhalation | kidney and/or bladder | Not classified | Rat | NOAEL 16.2 mg/l | 9 days |
| 1-methoxy-2-propyl acetate | Inhalation | olfactory system | Not classified | Mouse | LOAEL 1.62 mg/l | 9 days |
| 1-methoxy-2-propyl acetate | Inhalation | blood | Not classified | Multiple animal species | NOAEL 16.2 mg/l | 9 days |
| 1-methoxy-2-propyl acetate | Ingestion | endocrine system | Not classified | Rat | NOAEL 1,000 mg/kg/day | 44 days |
| Toluene 2,4-diisocyanate | Inhalation | respiratory system | Causes damage to organs through prolonged or repeated exposure | Human | NOAEL 0 mg/l | occupational exposure |
| Hexamethylene diisocyanate | Inhalation | liver \| kidney and/or bladder | Not classified | Rat | NOAEL 0.002 mg/l | 3 weeks |
| Hexamethylene diisocyanate | Inhalation | endocrine system | Not classified | Rat | NOAEL 0.0014 mg/l | 4 weeks |
| Hexamethylene diisocyanate | Inhalation | blood | Not classified | Rat | NOAEL 0.0012 mg/l | 2 years |
| Hexamethylene diisocyanate | Inhalation | nervous system | Not classified | Rat | NOAEL 0.002 mg/l | 7 weeks |
| Hexamethylene diisocyanate | Inhalation | heart | Not classified | Rat | NOAEL 0.001 mg/l | 90 days |

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

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

## SECTION 12: Ecological information

### 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.

Incinerate in a permitted waste incineration facility. As a disposal alternative, 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.

**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 |
| Respiratory or Skin Sensitization |
| Serious eye damage or eye irritation |
| Skin Corrosion or 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 | C.A.S. No | % by Wt |
|---|---|---|
| Polymethylene Polyphenylene Isocyanate | 9016-87-9 | Trade Secret 5 - 10 |
| Polymethylene Polyphenylene Isocyanate (DIISOCYANATES (CERTAIN CHEMICALS ONLY)) | 9016-87-9 | 5 - 10 |
| P,P'-Methylenebis(phenyl isocyanate) | 101-68-8 | Trade Secret 1 - 5 |
| P,P'-Methylenebis(phenyl isocyanate) (Benzene, 1,1'-methylenebis[4-isocyanato-) | 101-68-8 | 1 - 5 |
| P,P'-Methylenebis(phenyl isocyanate) | 101-68-8 | 1 - 5 |

| | | |
|---|---|---|
| (DIISOCYANATES (CERTAIN CHEMICALS ONLY)) | | |
| Hexamethylene diisocyanate (DIISOCYANATES (CERTAIN CHEMICALS ONLY)) | 822-06-0 | < 0.06 |

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

| Ingredient (Category if applicable) | C.A.S. No | Regulation | Status |
|---|---|---|---|
| Toluene 2,4-diisocyanate (Benzene, 1,3-diisocyanatomethyl-) | 584-84-9 | Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals | Proposed |
| Toluene 2,4-diisocyanate | 584-84-9 | Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals | Proposed |

**This material contains a chemical subject to a proposed EPA Significant New Use Rule (TSCA Section 5)**

| Ingredient (Category if applicable) | C.A.S. No | Reference |
|---|---|---|
| Toluene 2,4-diisocyanate | 584-84-9 | 80 FR 2068 |

**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.

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:** 2 **Flammability:** 3 **Instability:** 0 **Special Hazards:** None

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

| | | | |
|---|---|---|---|
| **Document Group:** | 33-2559-4 | **Version Number:** | 2.02 |
| **Issue Date:** | 04/25/18 | **Supercedes Date:** | 01/19/18 |

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