TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**Toxic compound, do not ingest or inhale. Avoid all contact with this material.** **Irritating to skin, eyes, and the respiratory system.** **POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE.**	

Section I. Chemical Product and Company Identification

Chemical Name: **Methanesulfonic Acid Methyl Ester**

Catalog Number	M0369
Synonym	Methyl Methanesulfonate
Chemical Formula	$CH_3SO_3CH_3$
CAS Number	66-27-3

Supplier: TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call: **Chemtrec®**
(800) 424-9300 (U.S.)
(703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Methanesulfonic Acid Methyl Ester	66-27-3	Min. 98.0 (GC)	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD_{50} (oral) 225 mg/kg Rat LD_{50} (intraperitoneal) 114 mg/kg Rat LD_{50} (intravenous) 175 mg/kg Mouse LD_{50} (oral) 290 mg/kg

Section III. Hazards Identification

Acute Health Effects

Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Classified by the IARC as a Group 2B carcinogen.
(sufficient evidence in animals, no adaquate data in humans)
Tumorigenic: Rat (inhalation) 50 ppm/6H/6W-I. Carcinogenic by RTECS criteria.
Tumorigenic: Mouse (subcutaneous) 5640 mg/kg/64W-I. Carcinogenic by RTECS criteria.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Not available.
DEVELOPMENTAL TOXICITY: Reproductive effective:
Rat (oral) 100 mg/kg. Duration: female 13 days of pregnancy. Specific Developmental Abnormalities: Craniofacial (including nose and tongue)
Rat (oral) 100 mg/kg. Duration: male 1 day to mating. Paternal effects: Spermatogenesis.
Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section IV. First Aid Measures

Eye Contact

Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Flush eyes with running water for a minimum of 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention. Treat symptomatically and supportively.

Skin Contact

If the chemical gets spilled on a clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical touches the victim's exposed skin, such as the hands: Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. COLD water may be used. Cover the irritated skin with an emollient. Seek medical attention. Treat symptomatically and supportively. Wash any contaminated clothing before reusing.

Inhalation

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Ingestion

INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt, or waistband. If the victim is not breathing, administer artificial respiration. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Continued on Next Page *Emergency phone number (800) 424-9300*

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	Not available.
Flash Points	104°C (219.2°F).	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO_2), sulfur oxides (SO_2, SO_3...).		
Fire Hazards	No specific information is available regarding the flammability of this compound in the presence of various materials.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. No additional information is available regarding the risks of explosion.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO_2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic liquid. Irritating liquid. Harmful liquid. Keep away from heat and sources of ignition. Mechanical exhaust required. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	TOXIC. IRRITANT. POSSIBLE CARCINOGEN. Handle with caution and minimize exposure. Keep away from heat and sources of ignition. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Avoid contact with skin and eyes. Always store away from incompatible compounds such as oxidizing agents.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Colorless liquid.	Solubility	Partially soluble in cold water, hot water.
Specific Gravity	1.3 (water=1)		
Molecular Weight	110.13	Partition Coefficient	Not available.
Boiling Point	202 to 203°C (395.6 to 397.4°F)	Vapor Pressure	Not available.
Melting Point	Not available.	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents.

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Section XI. Toxicological Information

RTECS Number	PB2625000
Routes of Exposure	Eye contact. Inhalation. Ingestion. Skin contact.
Toxicity Data	Rat LD_{50} (oral) 225 mg/kg Rat LD_{50} (intraperitoneal) 114 mg/kg Rat LD_{50} (intravenous) 175 mg/kg Mouse LD_{50} (oral) 290 mg/kg IPRRATLD50 114MG/KG
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Classified by the IARC as a Group 2B carcinogen. (sufficient evidence in animals, no adaquate data in humans) Tumorigenic: Rat (inhalation) 50 ppm/6H/6W-I. Carcinogenic by RTECS criteria. Tumorigenic: Mouse (subcutaneous) 5640 mg/kg/64W-I. Carcinogenic by RTECS criteria. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Not available. **DEVELOPMENTAL TOXICITY**: Reproductive effective: Rat (oral) 100 mg/kg. Duration: female 13 days of pregnancy. Specific Developmental Abnormalities: Craniofacial (including nose and tongue) Rat (oral) 100 mg/kg. Duration: male 1 day to mating. Paternal effects: Spermatogenesis. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Methyl methanesulfonate's limited production and use as a research chemical could result in limited release to the environment through various waste streams. If released to the atmosphere, methyl methanesulfonate will exist mainly in the vapor phase based on an estimated vapor pressure of 0.31 mm Hg. In the vapor phase, methyl methanesulfonate will react slowly with hydroxyl radicals with an estimated half-life of 69 days. In moist air, this compound may hydrolyze fairly rapidly based on measured hydrolysis half-lives in water of 4.56, 9.66, and 77 hours. Based on an estimated Koc of 10, methyl methanesulfonate should have very high mobility in soil. As this compound is estimated to be miscible with water leaching may be possible; however, hydrolysis in moist soils may preclude leaching as a major fate process for methyl methanesulfonate. Some volatilization from dry soil surfaces may occur based on an estimated vapor pressure of 0.31 mm Hg. In water, hydrolysis of methyl methanesulfonate is expected to be the major fate process. An estimated BCF value of 0.2 suggests that this compound will not bioconcentrate in aquatic organisms. Methyl methanesulfonate is not expected to significantly volatilize from water surfaces based on an estimated Henry's Law constant of 4.03X10-6 atm-cu m/mole. (HSDB)

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state, and local regulations when disposing of this substance.

Section XIV. Transport Information

DOT Classification	DOT CLASS 6.1: Toxic material.
PIN Number	UN2810
Proper Shipping Name	Toxic liquid, organic, n.o.s.
Packing Group (PG)	III
DOT Pictograms	

Continued on Next Page Emergency phone number (800) 424-9300

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	WHMIS CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).
EINECS Number (EEC)	200-625-0
EEC Risk Statements	R28- Very toxic if swallowed. R36/38- Irritating to eyes and skin.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 7/22/1997.
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Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.