NAME OF PRODUCT Methyl methanesulfonate

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Catalog Number(s):

60-108	25 µl/vial, 5/pack
60-108.1	100 µl/vial, 5/pack
60-108.3	1 mg, 5/pack
60-108.4	1.5 mg/vial, 5/pack
60-134	250 µl/vial, 5/pack
60-158	500 µg/vial, 1/pack

Product name: **Methyl methanesulfonate**

Synonyms: Methanesulfonic acid methyl ester; methyl methanesulfonic acid; *as*-dimethyl sulfite; methyl mesylate; MMS

Manufacturer: Molecular Toxicology Inc.

Address: 157 Industrial Park Drive, Boone, North Carolina, 28607

Phone: (1) 828 264 9099 (8:30 – 17:00 EST)

Fax: 828 264 0103

Emergency contact (Chemtrec): Contact 1800-424-9300 (USA) or 703 527 3887 (International) at other times

Email: chemtrec@chemtrec.com; http://www.chemtrec.com/

Recommended use: Laboratory, For Research Only

Restrictions on use: Not for clinical use

Section 1 notes:

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture per GSH and EU Directive 1272/2008

Danger

Physical hazards None known

Health hazards	Acute toxicity, Oral (Category 3) Skin irritation (Category 2) Eye irritation (Category 2A) Carcinogenicity (Category 1B) Specific target organ toxicity - single exposure (Category 3), respiratory system
Environmental hazards	See eco-toxicity section 12.

Labelling

Hazard Statements	H301 Toxic if swallowed. H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H350 May cause cancer. H341 Suspected of causing genetic defects
Precautionary Statements	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/eye protection/face protection P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth. P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. 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 P332+313 If skin irritation occurs: Get medical attention/advice P337+313 If eye irritation persists: Get medical attention/advice P362 Take off contaminated clothing and wash before reuse. P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up. P501 Dispose of contents/ container to an approved waste disposal plant.
Other hazards	**Hazards not otherwise classified (HNOC) or not covered by GHS** - none

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Component	Purpose	CAS-No	EC-No.	Weight %
Methyl Methanesulfonate	Biochemical used in the study of	66-27-3	200-625-0	≤ 100%

$C_2H_6O_3S$ carcinogenesis

SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	Rinse eyes and under eyelids immediately with plenty of water for at least 15 minutes. Consult a doctor.
Skin Contact	Wash off with plenty of soap and water. Take victim immediately to hospital. Consult a physician.
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth with plenty of water. Consult a physician.
Inhalation	If breathed in, move person into fresh air. If not breathing, provide artificial respiration. Consult a physician.
Protection of first-aiders	Not required

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture

No data available

Advice for firefighters

Fire-fighters should wear self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not release material into drains.

Methods and material for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Reference to other sections

Refer to Sections 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
For precautions see section 2.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects**.**

Specific end use(s)

Apart from the uses mentioned in section 3 no other specific uses are stipulated.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits

Contains no substances with occupational exposure limit values.

Monitoring methods

N/A

Exposure controls

Engineering Measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye Protection: Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand Protection
Chemical resistant gloves; nitrile or butyl- rubber recommended. Inspect gloves before use. Use proper glove removal technique (without
touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.2 mm
Break through time: 68 min
Material tested:Dermatril® P (KCL 743 / Aldrich Z677388, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls.
If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains

Exposure limits

Permissible Exposure Limits and Threshold Limit Values not specified by OSHA.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear liquid, light yellow
Auto-ignition temperature	no data available
Boiling point	202-203ºC (396-397ºF)
Decomposition temperature	no data available
Density	1.3 g/cm^3 at 25ºC (77ºF)
Flammable limits in air	no data available
Flash point	104ºC (219ºF)
Formula	$C_2H_6O_3S$
Melting point	300ºC (572ºF)
Molecular weight	110.13 g/mol
Odor threshold	no data available
Osmolality	no data available
pH	no data available
Solubility in water	no data available
Specific gravity	no data available
Vapor density	no data available
Vapor pressure	no data available
Viscosity	no data available

Other information

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive.

Chemical stability

Stable under recommended conditions. Decomposition will not occur if used and stored appropriately.

Possibility of hazardous reactions

No hazardous reactions known.

Conditions to avoid

No data available

Incompatible materials

Strong oxidizing agents, strong bases, strong bases.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, sulfur oxides

Other decomposition products – unknown

In the event of fire, see section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity
Oral LD50
LD50 Oral - rat - 225 mg/kg

Inhalation LC50
Dermal LD50
no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen

IARC: 2A - Group 2A: Probably carcinogenic to humans (Methyl methanesulphonate)

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: Reasonably anticipated to be a human carcinogen (Methyl methanesulphonate)

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion Toxic if swallowed.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: PB2625000

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Aquatic ecotoxicity: no data available
Persistance and degradability: No data available.

Behavior in environment systems:
Bioaccumulative potential: No data available.
Mobility in soil: No data available.
Additional ecological information:

General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course, or sewage system.
Do not allow material to be released to the environment without proper governmental permits.

Results of PBT and vPVB Assessment
PBT: Not applicable
vPvB: Not applicable

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional wastedisposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)
UN number: 2810 Class: 6.1 Packing group: III
Proper shipping name: Toxic, liquids, organic, n.o.s. (Methyl methanesulphonate)
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 2810 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC LIQUID, ORGANIC, N.O.S. (Methyl methanesulphonate)
Marine pollutant: No

IATA
UN number: 2810 Class: 6.1 Packing group: III
Proper shipping name: Toxic liquid, organic, n.o.s. (Methyl methanesulphonate) inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

Other shipping information:
When sold in quantities of less than or equal to 1 ml, or 1g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore, packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

SECTION 15. REGULATORY INFORMATION

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
Methyl methanesulphonate
CAS-No. 66-27-3

Pennsylvania Right To Know Components
Methyl methanesulphonate
CAS-No.66-27-3

New Jersey Right To Know Components
Methyl methanesulphonate
CAS-No. 66-27-3

California Prop. 65 Components
WARNING! This product contains a chemical known to the State of California to cause cancer.
Methyl methanesulphonate
CAS-No.66-27-3

SECTION 16. OTHER INFORMATION

HMIS Rating
Health hazard: 2
Chronic Health Hazard: *
Flammability: 1
Physical Hazard 0

NFPA Rating
Health hazard: 2
Fire Hazard: 1
Reactivity Hazard: 0

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge

applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Molecular Toxicology, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See www.moltox.com and/or the invoice or packing slip for additional terms and conditions of sale.