SAFETY DATA SHEET

MOLTOX®
Molecular Toxicology, Inc.

NAME OF PRODUCT Ethyl Methanesulfonate

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Catalog Number(s):

60-115 20 µL/vial

Product name: **Ethyl Methanesulfonate**

Synonyms: Ethylmethane sulfonate, EMS, ethyl ester methanesulfonic acid

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 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 4)
Germ Cell Mutagenicity (Category 1B)
Carcinogenicity (Category 2)
Skin corrosion/irritation (Category 2)
Serious Eye Damage/Irritation (Category 2)
Specific Organ Toxicity (Single Exposure) (Category 3)
Target organs: Respiratory system

Environmental hazards See eco-toxicity section 12.

Labelling

Hazard Statements
H302 Harmful if swallowed
H340 May cause genetic defects
H351 Suspected of causing cancer
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary Statements
P308+313 IF exposed or concerned: Get medical advice/attention
P201 Receive special instructions before use

P202 Do not handle until all safety precautions are understood
P264 Wash hands thoroughly after handling
P270 Do not eat, drink, or smoke while using this product
P281 Use personal protective equipment as required
P301+312+330 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
P501 Dispose of contents/container to an approved waste disposal plant
P271 Use only outdoors or in a well-ventilated area
P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+350+338+337+313 IF IN EYES: Rinse cautiously with water for several minutes. Remove contacts if present and easy to do so. Continue rinsing. If eye irritation persists, get medical attention/advice.

Other hazards

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Component	Purpose	CAS-No	EC-No.	Weight %
EMS $C_3H_8O_3S$	Biochemical used in the study of carcinogenesis	62-50-0	200-536-7	100%

SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	Rinse eyes and under eyelids immediately with plenty of water. Consult a doctor.
Skin Contact	Wash off immediately with plenty of soap and water and rinse thoroughly. Consult a physician.
Ingestion	Rinse mouth with plenty of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention.
Inhalation	Move to fresh air. If required, 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. In the event that symptoms develop or persists, obtain medical attention.

Most important symptoms and effects, both acute and delayed

Acute: Not determined
Chronic: Not determined

Indication of any immediate medical attention and special treatment needed

Seek medical attention if ingested or if breathing difficulties are observed.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Use media suitable for extinguishing surrounding fire (carbon dioxide, extinguishing powder or water spray). Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture

Hazardous thermal decomposition products: Carbon dioxide, carbon monoxide, sulfur oxides
Keep product and container away from heat and sources of ignition.

Advice for firefighters

Fire-fighters should wear fully protective impervious protective equipment and self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas.

Environmental precautions

Do not release material into drains.

Methods and material for containment and cleaning up

Soak up with inert absorbent material (sand, silica gel, acid binder, universal binder, sawdust) 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 ingestion and inhalation. Avoid contact with eyes, skin, and clothing. Do not breathe dust/spray/mist.

Conditions for safe storage, including any incompatibilities

Store according to product packaging, tightly sealed. Keep in a dry, well-ventilated place. Store under an inert atmosphere. Containers which are opened must be carefully resealed and kept upright to prevent further leakage.
Moisture-sensitive.

Storage Class (TRGS 510): Non-combustible, acute toxic Cat. 3/toxic hazardous materials or hazardour materials causing chronic effects.

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

Ensure adequate ventilation, especially in confined areas

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimize release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection: Safety glasses with side-shields conforming to EN166 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 rubber recommended. Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves (refer to manufacturer/supplier for information). If material is solubilized, account for solvent in glove assessment.

Remove gloves with care avoiding skin contamination.

Skin and body protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection

Exposure risk assessment must be performed by a qualified Industrial Hygienist. Where risk assessment shows air purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. NIOSH approved Respiratory Protection is required by EPA. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures - Handle in accordance with good industrial hygiene and safety practice. Wash hands, forearms and face thoroughly after handling chemical products, before smoking, eating and using lavatory, and at the end of the work period. Employ techniques to avoid contamination of clothing. Keep away from food, beverages, and feed.

Environmental exposure controls – Not determined.

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	Light brown liquid
Auto-ignition temperature	no data available
Boiling point	85-86°C
Decomposition temperature	no data available
Flammable limits in air	no data available
Flash point	100°C
Formula	$C_3H_8O_3S$
Melting point	< 25°C
Molecular weight	124.16 g/mol
Odor threshold	no data available
Osmolality	no data available
Partition Coefficient	Log Pow: 0.09
pH	no data available
Relative Density	1.206 g/mL at 20°C
Solubility in water	No data available
Specific gravity	no data available
Vapor density	no data available
Vapor pressure	0.275 hPa (0.206 mmHg) at 25°C
Viscosity	no data available

Other information

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive.

Chemical stability

May decompose on exposure to moist air or water.
Stable under recommended storage conditions.

Possibility of hazardous reactions

No hazardous reactions known.

Conditions to avoid

Strong oxidizing agents

Incompatible materials

Strong bases, strong oxidizing agents

Hazardous decomposition products

Carbon monoxide, carbon dioxide, sulfur oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity
LD_{50} Oral, mouse 470 mg/kg

Irritation
Irritating to the skin, eyes, and respiratory system

Germ cell mutagenicity
Animal experiments showed mutagenic effects

Carcinogenicity
This product is or contains a component that has been reported to be possibly carcinogenic according to IARC, ACGIH, NTP, and OSHA classifications

IARC: 2B: Group 2B. Possibly carcinogenic to humans. (Ethyl methanesulfonate)

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 carcinogen. (Ethyl methanesulfonate)

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

Reproductive toxicity
Overexposure may cause reproductive disorders based on tests with laboratory animals.

Teratogenicity
Animal experiment showed teratogenic effects

Specific target organ toxicity - single exposure (Globally Harmonized System)
Respiratory system

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.
Ingestion May be harmful if swallowed.
Skin May be harmful if absorbed through skin.
Eyes Causes eye irritation.

Synergistic effects
no data available

Additional toxicological information:
RTECS: PB2100000

SECTION 12. ECOLOGICAL INFORMATION

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: No data available.
General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course, or sewage system.

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 waste disposal 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) regulations:
Not regulated

IMDG
Not regulated

IATA
Not regulated

Further information
Not available.

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
62-50-0 ethyl methanesulfonate

Pennsylvania Right To Know Components
62-50-0 ethyl methanesulfonate

New Jersey Right To Know Components
62-50-0 ethyl methanesulfonate

California Prop. 65 Components
WARNING! This product contains a chemical known to State of California to cause cancer
62-50-0 ethyl methanesulfonate

SECTION 16. OTHER INFORMATION

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.