

# Material Safety Data Sheet



Revision Date 2017. 03. 20

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product name	Mse I
Product code	R062S, R062M, R062L, R062H
Recommended use of the chemical and restrictions on use	
Recommended use	For research use only
Restrictions on use	For research use only
Details of the supplier	
Company name	Enzynomics Inc.
Address	Munji-ro 281-9, Yuseong-gu, Daejeon, 34050, Korea
Emergency contact number	+82-42-719-1023

## 2. HAZARDS IDENTIFICATION

Classification of Hazards and dangerousness	No relevant classification
Warning article including prevention methods	
Pictorial symbol	No information available
Category	No information available
Hazards and dangerousness	No information available
Prevention methods	
Prevention	No information available
Action	No information available
Store	No information available
Discard	No information available
Other hazards and dangerousness (NFPA) not included in classification	
Health	1
Fire	1
Reactivity	0

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material name	Usual name	CAS No.	Amount (%)
Glycerin	GLYCEROL	56-81-5	40 ~ 60

#### 4. FIRST AID MEASURES

<b>Eye contact</b>	Take medical action immediately. Immediately rinse skin and eyes thoroughly with plenty of running water for at least 20 minutes.
<b>Skin contact</b>	Take medical action immediately. Immediately rinse skin and eyes thoroughly with plenty of running water for at least 20 minutes. Remove contaminated clothes and shoes and isolate contaminated area Completely wash clothes and shoes before reuse
<b>Inhalation</b>	Remove to fresh air CPR when there is no breathing Provide Oxygen when breathing is difficult Take medical action immediately.
<b>Ingestion</b>	Do not provide any food for unconscious person
<b>Note to physicians</b>	Take protective action according to the material Do not inject adrenalin

#### 5. FIRE FIGHTING MEASURES

<b>Proper (improper) fire extinguishing agents</b>	Small fire: dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO <sub>2</sub> (suitable extinguishing agent) Large fires: water spray / mist, regular foam (suitable extinguishing agent) High pressure water (improper extinguishing agent)
<b>Specific hazards from chemical compounds</b>	Can be ignited by heat, spark, flame Container may explode on heating Some can ride, but not easily ignite May cause irritation and poisonous gas in case of fire Inhalation of the substance may be harmful Some fluids may cause dizziness, suffocation-inducing vapors
<b>Protective equipment and precautions for fire fighting</b>	
Glycerin	No information available

#### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions, protective equipment and emergency procedures</b>	Micro particles can ignite fire or explosion therefore remove all the sources of fire.  Stop leak if it is not dangerous Give attention to materials and conditions that should be avoid Do not enter the space without proper respirator or respirator until proper air (oxygen concentration 18 ~ 23.5%) is available.
<b>Environmental precautions</b>	Prevent entry into waterways, sewers, basements, and confined spaces.
<b>Containment and cleaning up</b>	In case of small leakage, flush contaminated area with large amount of water In case of small leakage, absorb with sand and non-combustible material and place in container. In case of large leakage, make a ditch away from liquid spills Put spills into a clean, dry container with clean shovel, loosely closed, then transfer container from leak area In case of powder leakage, cover with plastic sheet to prevent spread and keep dry

## 7. HANDLING AND STORAGE

<b>Precautions for safe handling</b>	Note the substances and conditions to avoid Wash thoroughly after handling Note the high temperature In case of material leakage, reduce the oxygen concentration in the air and cause suffocation in an enclosed space, so be careful not to spill Check the oxygen concentration before entering the place because there is a risk of loss of consciousness or death due to oxygen deficiency at high concentration in the air Keep this temperature below 20°C because this material evaporates slowly and reaches hazardous concentrations. Do not spray because it will evaporate faster if sprayed
<b>Conditions for safe storage</b>	Keep it tightly closed Store in a cool, dry place

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure standard of chemical compound, biological exposure standard

#### Domestic regulations

Glycerin TWA - 10 mg/m<sup>3</sup>

#### ACGIH regulation

Glycerin TWA - 10 mg/m<sup>3</sup>

#### Biological release regulation

Glycerin No information applicable

### Individual protection equipment

#### Respiratory protection

Use respiratory protection equipment certified by Korea occupational safety and health agency in a release of gas/liquid according to their chemical physical properties.

Use proper filter or half-circled respiratory protection cartridge equipment if the concentration of release material is lower than 100mg/m<sup>3</sup>

Use proper filter or loose-fitting respiratory protection cartridge equipment such as hood/helmet shape motor operated equipment or continuous flow protection mask if the concentration of release material is lower than 250mg/m<sup>3</sup>

Use proper filter or full face cartridge or motor operated half-circled equipment or half circled continuous flow air supply respiratory protection equipment if the concentration of release material is lower than 500mg/m<sup>3</sup>

Use proper filter or full faced respiratory protection cartridge equipment or hood/helmet type, pressurized mask if the concentration of release material is lower than 10000mg/m<sup>3</sup>

Use proper filter or auto air supply (SCBA) equipment or pressurized auto air supply (SCBA) respiratory protection equipment if the concentration of release material is lower than 100000mg/m<sup>3</sup>

#### Eye protection

Use chemical protection glasses and safety glasses

Install eyewash and emergency shower near work area

#### Hand protection

Wear suitable chemical resistant gloves

#### Body protection

Wear suitable chemical resistant clothing

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

<b>State</b>	Liquid
<b>Color</b>	Dark color to yellow color
<b>Odor</b>	Dull
<b>Odor threshold</b>	No information available
<b>pH</b>	Neutral
<b>Melting point/freezing point</b>	20 °C
<b>Early boiling point and range</b>	171 °C
<b>Flashing point</b>	160 °C ((c.c.))

<b>Evaporation rate</b>	No information available
<b>Evaporation rate (solid/liquid)</b>	Liquid
<b>Maximum / minimum evaporation or explosion range</b>	19 / 2.7 %
<b>Steam pressure</b>	0.0025 mmHg (at 50 °C)
<b>Solubility</b>	water solubility :1000 g/L at 25 °C solvent solubility: alcohol, ethyl acetate, ether insolubility, benzene, chloroform, carbon tetrachloride, carbon disulfide, oil ether, oil
<b>Vapor density</b>	3.1 ((air=1))
<b>Specific gravity</b>	1.2613 ((water=1))
<b>n-octanol/ distribution coefficient</b>	No information available
<b>Self-ignition temperature</b>	370 °C
<b>Disassemble temperature</b>	290 °C
<b>Viscosity</b>	954 cP (at 25 C)
<b>Molecular weight</b>	92.09

## 10. STABILITY AND REACTIVITY

### Chemical stability and possibility of hazardous reactions

Glycerin	No information available
<b>Situation to avoid</b>	
Glycerin	No information available
<b>Materials to avoid</b>	
Glycerin	No information available
<b>Harmful material produce by degradation</b>	
Glycerin	No information available

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

Glycerin	irritation, difficult to breathe, area, vomit, diarrhea, headache, dizziness, Sleep disorder, kidney problem, paralyzed
	Can absorb body by suction
	Can be absorbed by suction and extinguisher
	Through skin, digestive system, can absorb body by inhalation of aerosol
	Able to absorb body by suction of steam
	Can be absorbed by inhalation, skin and digestive system

### Health maleficence information

#### Acute poison

##### Oral

Glycerin	LD50 27200 mg/kg Rat (rat/LD50/12600mg/kg(IUCLID))
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##### Ingestion

Glycerin	LD50 > 10000 mg/kg Rat
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##### Inhalation

Glycerin	No information available
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#### Skin corrosion or irritant agent

Glycerin	No irritation on skin
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#### Serious eye damage or irritation

Glycerin	No irritation on eyes
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#### Respiratory organ hypersensitiveness

Glycerin	No information available
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#### Skin hypersensitiveness

Glycerin	No information available
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#### Carcinogenic

#### Occupational safety and health acts

Glycerin	No information available
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#### Employment announcement

Glycerin	No information available
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**IARC**

Glycerin No information available

**OSHA**

Glycerin No information available

**ACGIH**

Glycerin No information available

**NTP**

Glycerin No information available

**EU CLP**

Glycerin No information available

**Germ cell mutagenicity**

Glycerin Many color mammal red blood cell/negative

**Reproduction toxicity test**

Glycerin No information available

**Special target poison (1 time exposer)**

Glycerin No information available

**Special target poison (long exposer)**Glycerin rat(inhale):1-4mg/l  
epiglottis epithelium**Absorption injurious**

Glycerin No information available

**12. ECOLOGICAL INFORMATION****Ecotoxicity****Fish**

Glycerin LC50 5000 mg/l 24 hr Carassius auratus

**Crustacean**Glycerin EC50 > 10000 mg/l 24 hr Daphnia magna (Daphnia magna EC50(24HR)  
10000mg/L(US EPA ECOTOX); Daphnia magna EC50(24HR) >10000 mg/L (EU  
IUCLID))**Algae**

Glycerin (LC50(96hr) 77712.039 mg/L)

**Residual fungicide and resolvability****Residual fungicide**

Glycerin No information available

**Resolvability**

Glycerin No information available

**Life enrichment****Enrichment**

Glycerin No expected life enrichment

**Biodegradability**Glycerin 63 (%) 14 day Fast biodegradability (OECD SIDS),  
93% biodegradability in 30 days (OECD TG 301D) (IUCLID))**Soil**

Glycerin No information available

**Other harmful influences**

Glycerin Environmental summary : No information on toxicity on aquatic organisms

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment method**

Glycerin No information available

**Disposal considerations**

Glycerin Dispose container and content according to the waster control act

### 14. TRANSPORT INFORMATION

**IATA****Propriety shipping name**

Glycerin No dangerous good in sense of these transport regulations

**Hazard class**

Glycerin No information available

**Subsidiary class**

Glycerin No information available

**Packing group**

Glycerin No information available

**UN-No**

Glycerin No information available

**Environmental hazards**

Glycerin No information available

### 15. REGULATORY INFORMATION

**Regulations of occupational safety and health act**

No information available

Glycerin

Exposure standard materials

**Regulations of toxic chemicals regulation act**

Glycerin

No information available

**Regulations of safety control of dangerous substances act**

Glycerin

4th class The third kind Petroleum(Receptivity) 4000 L

**Regulations of waste control act**

Glycerin

Designated waste

**Regulations of other domestic and international act****Domestic act****Persistent organic pollutants control act**

Glycerin

No information applicable

**Foreign act****American supervision information**

Glycerin

No information applicable

**CERCLA**

Glycerin

No information applicable

**EPCRA 302**

Glycerin

No information applicable

**EPCRA 304**

Glycerin

No information applicable

**EPCRA 313**

Glycerin

No information applicable

**American supervision information  
(Rotterdam agreement material)**

Glycerin

No information applicable

**American supervision information  
(Stockholm agreement material)**

Glycerin

No information applicable

**American supervision information  
(Montreal protocol material)**

Glycerin

No information applicable

**EU Classification information  
(Confirmed classification results)**

Glycerin No information applicable

**EU Classification information  
(Danger expression)**

Glycerin No information applicable

**EU Classification information  
(Safety expression)**

Glycerin No information applicable

**16. OTHER INFORMATION**

Source of material

- IUCLID (oral)
- SIDS (oral)
- SIDS (skin corrosive or irritant)
- SIDS (severe eye damage or irritation)
- NLM (Germ Cell Mutagenesis)
- IUCLID (specific target organ toxicity (repeated exposure))
- OECD SIDS (fish)
- EU IUCLID (Crustaceans)
- OECD SIDS (Crustaceans)
- US EPA ECOTOX (Crustaceans)
- ECOSAR (agar)
- OECD SIDS (Enrichment)
- IUCLDE (biodegradable)
- OECD SIDS (biodegradable)
- OECD TG 301C (biodegradable)
- OECD TG 301D (biodegradable)

The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since Enzynomics, Inc. cannot control the actual methods, volumes, or conditions of use, the company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein.

Questions about the information found on this MSDS should be directed to [info@enzynomics.com](mailto:info@enzynomics.com).

End of Material Safety Data Sheet