SIGMA-ALDRICH

Material Safety Data Sheet

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Section 1 - Product and Company Information

Product Name	METHYL METHACRYLATE, 99%
Product Number	M55909
Brand	Aldrich Chemical
Company	Sigma-Aldrich
Street Address	3050 Spruce Street
City, State, Zip, Country	St. Louis, MO, 63103, US
Technical Phone:	314 771 5765
Emergency Phone:	414 273 3850 Ext.5996
Fax:	800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
METHACRYLIC ACID METHYL ESTER	80-62-6	Yes

Formula C5H8O2

Synonyms Acrylic acid, 2-methyl-, methyl ester, Metakrylan metylu (Polish), Methacrylate de methyle (French), Methacrylsaeuremethyl ester (German), 2-(Methoxycarbonyl)-1-propene, Methylester kyseliny methakrylove (Czech), Methylmethacrylaat (Dutch), Methyl-methacrylat (German), Methyl methacrylate (ACGIH:OSHA), Methyl methacrylate monomer, Methyl methylacrylate, Methyl alpha-methylacrylate, Methyl 2-methyl-2-propenoate, 2-Methyl-2-propenoic acid methyl ester, Metil metacrilato (Italian), NCI-C50680, Pegalan, 2-Propenoic acid, 2-methyl-, methyl ester, RCRA waste number U162

Section 3 - Hazards Identification

Emergency Overview
Flammable (USA) Highly Flammable (EU). Corrosive.
Causes burns. May cause sensitization by inhalation and skin contact.
Lachrymator. Target organ(s): Nose. Liver.

HMIS Rating
Health: 3 Flammability: 3 Reactivity: 0

NFPA Ratings
Health: 3 Flammability: 3 Reactivity: 0

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Immediate Treatment - Work Site
In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.

Inhalation Exposure
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Eye Exposure
Assure adequate flushing of the eyes by separating the eyelids with fingers.

Section 5 - Fire Fighting Measures

Explosion Hazards
Vapor may travel considerable distance to source of ignition and flash back.
Container explosion may occur under fire conditions.

Flash Point:	48.2 °F	9 °C	
Explosion Limits:	**Lower:** 2.12 %	**Upper:** 12.5 %	
Autoignition Temp:	435 °C	**Flammability:**	N/A

Extinguishing Media
Suitable
Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Flammable liquid. Vapor may travel considerable distance to source of ignition and flash back.
Specific Method(s) of Fire Fighting
Use water spray to cool fire-exposed containers.

Exposure Hazard(s)
Material
Corrosive. Lachrymator. Sensitizer.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill
Evacuate area. Shut off all sources of ignition.

Procedure(s) of Personal Precaution(s)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed. Keep away from heat, sparks, and open flame.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Use only in a chemical fume hood.

Personal Protective Equipment

Hand
Wear heavy rubber gloves.
Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling. Discard contaminated shoes.

Exposure Limits, RTECS

Country	Source	Type	Value	Remarks
USA	ACGIH	TWA	410 MG/M3 (100 PPM)	
USA	MSHA Standard-air	TWA	100 PPM (410 MG/M3)	
USA	OSHA.	PEL	8H TWA 100 PPM (410 MG/M3)	
New Zealand	OEL			check ACGIH TLV
USA	NIOSH	TWA	100 PPM	

Section 9 - Physical/Chemical Properties

Appearance

Physical State	Color
Liquid	Colorless

Molecular Weight: 100.12 AMU

Property	Value
pH	N/A
BP/BP Range	98 - 100 °C
MP/MP Range	-48 °C
Freezing Point	N/A
Vapor Pressure	N/A
Vapor Density	3.5 g/l
Saturated Vapor Conc.	N/A
SG/Density	0.943 g/cm3
Bulk Density	N/A
Odor Threshold	N/A
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point °F	48.2 °F
Flash Point °C	9 °C
Explosion Limits	Lower: 2.12 % Upper: 12.5 %
Autoignition Temp	435 °C
Refractive Index	1.414
Solubility	N/A

Section 10 - Stability and Reactivity

Stability
Conditions to Avoid
Heat May polymerize on exposure to light

Materials to Avoid
Oxidizing agents, Peroxides, Amines.

Hazardous Decomposition Products
Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Multiple Routes
Harmful if swallowed, inhaled, or absorbed through skin.

Sensitization
Sensitization
May cause allergic respiratory and skin reactions

Target Organ(s) or System(s)
Nose. Liver. Kidneys.

Signs and Symptoms of Exposure
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Prolonged exposure can cause: Narcotic effect.

RTECS Number: OZ5075000

Toxicity Data

Oral - Rat: 7,872 mg/kg (LD50)
Remarks: Behavioral:Muscle weakness.
Behavioral:Coma.
Lungs, Thorax, or Respiration:Respiratory depression.

Inhalation - Rat: 78,000 mg/m3 (LC50)

Intraperitoneal - Rat: 1328 MG/KG (LD50)

Subcutaneous - Rat: 7088 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Oral - Mouse: 3,625 mg/kg (LD50)

Inhalation - Mouse: 18,500 mg/m3 (LC50)

Intraperitoneal - Mouse: 945 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Subcutaneous - Mouse: 5954 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Oral - Dog: 4,725 mg/kg (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).
Behavioral:Ataxia.
Gastrointestinal:Changes in structure or function of salivary glands.

Subcutaneous - Dog: 4252 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Oral - Rabbit: 8,700 mg/kg (LD50)

Skin - Rabbit: > 5,000 mg/kg (LD50)
Remarks: Skin and Appendages:Skin: After systemic exposure: Dermatitis, other

Oral - Guinea pig: 5,954 mg/kg (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).
Behavioral:Ataxia.
Gastrointestinal:Changes in structure or function of salivary glands.

Intraperitoneal - Guinea pig: 1890 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Subcutaneous - Guinea pig: 5954 MG/KG (LD50)
Remarks: Behavioral:Somnolence (general depressed activity).

Inhalation - Mammal: 20,000 mg/m3 (LC50)

Irritation Data

Skin - Rabbit: 10,000 mg KG
Remarks: Open irritation test

Eyes - Rabbit: 150 mg

Chronic Exposure Carcinogen

Rat - Implant: 1620 MG/KG
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Tumorigenic:Tumors at site or application.

IARC Carcinogen List

Rating
Group 3

NTP Carcinogen List

Rating	*Species*	*Route*
No evidence.	Mouse/rat	Inhalation

ACGIH Carcinogen List

Rating
A4

Chronic Exposure - Teratogen

Species	*Dose*	*Route of Application*	*Exposure Time*
Rat	109 GM/M3/17M	Inhalation	(6-15D PREG)
Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.			
Rat	109 GM/M3/54M	Inhalation	(6-15D PREG)
Result:Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Other developmental abnormalities.			
Rat	405 MG/KG	Intraperitoneal	(5-15D PREG)
Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Other developmental abnormalities.			
Rat	801 MG/KG	Intraperitoneal	(5-15D PREG)
Result:Specific Developmental Abnormalities: Other developmental abnormalities.			

Chronic Exposure - Mutagen

Species	*Dose*	*Route*	*Cell Type*	*Mutation test*
Rat	4 MG/M3/16W	Inhalation		Cytogenetic analysis
Mouse	2202 MG/L		lymphocyte	Micronucleus test
Mouse	500 MG/L (+S9)		lymphocyte	Mutation in microorganisms
Mouse	2799 MG/L		lymphocyte	Cytogenetic analysis
Mouse	2202 MG/L		lymphocyte	Cytogenetic analysis
Mouse	704 MG/L		lymphocyte	Mutation in mammalian somatic cells.
Hamster	1600 MG/L		ovary	Cytogenetic analysis
Hamster	1500 MG/L		ovary	Sister chromatid exchange

Chronic Exposure - Reproductive Hazard

Species	*Dose*	*Route of Application*	*Exposure Time*
Woman	10 MG/M3	Inhalation	(9Y PREG)

Result: Maternal Effects: Other effects. Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Newborn: Delayed effects.

Rat	54 MG/M3/24H	Inhalation	(8W PRE)

Result: Maternal Effects: Menstrual cycle changes or disorders.

Rat	4480 MG/M3/2H	Inhalation	(6-18D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Section 12 - Ecological Information

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Methyl methacrylate monomer, inhibited
UN#: 1247
Class: 3
Packing Group: Packing Group II
PIH: Not PIH

IATA
Proper Shipping Name: METHYL METHACRYLATE MONOMER, I NHIBITED
IATA Number: 1247
Hazard Class: 3
Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: F Xi
Indication of Danger
Highly Flammable. Irritant.
Risk Statements **R:** 11 36/37/38 43
Highly flammable. Irritating to eyes, respiratory system, and skin. May cause sensitization by skin contact.
Safety Statements **S:** 9 16 29 33
Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Do not empty into drains. Take precautionary measures against static discharges.

US Classification and Label Text
Indication of Danger
Flammable (USA) Highly Flammable (EU). Corrosive.
Risk Statements
Causes burns. May cause sensitization by inhalation and skin contact.
Safety Statements
Keep away from sources of ignition - no smoking. Keep container tightly closed in a cool well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.
US Statements
Lachrymator. Target organ(s): Nose. Liver.

United States Regulatory Information
SARA 313 Listed: Yes

Deminimis: 1 %
Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Section 16 - Other Information

Warranty
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.