

# SAFETY DATA SHEET

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

GHS Product Identifier	METHYL METHACRYLATE
Product Description	This product contains Methyl methacrylate and low levels of stabiliser.
Alternative names	Stabilized Methyl methacrylate monomer; 2-Propenoic acid, 2-methyl-, methyl ester; MMA; MMM
CAS No.	80-62-6
Identified use(s)	Manufacture
	Formulation and re-packing
	Use at industrial sites
	Professional end use in formulations.
Uses advised against	Mixtures containing unreacted liquid monomer intended to come into contact with skin or nails.
Supplier's details	Methacrylates Division
	Mitsubishi Chemical Methacrylates Singapore Pte. Ltd.
	31 Sakra Avenue, #01-01, Jurong Island
	Singapore 627801
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Emergency Phone No.	+65 6303 4899

### 2. HAZARDS IDENTIFICATION

### Hazard classification

Flammable liquid Category 2. Skin corrosion / irritation Category 2. Skin sensitisation Category 1. STOT - single exposure Category 3. (Respiratory tract irritation) Hazardous to the aquatic environment - Acute hazard Category 3.

### Label elements



Signal word Hazard statement(s)

Precautionary statement(s)

Danger
H225: Highly flammable liquid and vapour.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
H402: Harmful to aquatic life.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.
P261: Avoid breathing vapours.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352: IF ON SKIN: Wash with plenty of water.
P501: Dispose of contents/container to hazardous waste in accordance with local, state or

P501: Dispose of contents/container to hazardous waste in accordance with local, state or national legislation. Incinerate under approved controlled conditions, using incinerators suitable for the disposal of flammable organics.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical identity of the substance Common name(s), synonym(s) of the substance CAS No. Methyl methacrylate Stabilized Methyl methacrylate monomer; 2-Propenoic acid, 2-methyl-, methyl ester; MMA; MMM. 80-62-6

Substances in the product which may present a health or environmental hazard, or which have been assigned occupational exposure limits, are detailed below.

Hazardous Ingredient(s)	%W/W	CAS No.
Methyl methacrylate	>99	80-62-6

# 4. FIRST AID MEASURES

Description of first aid measures	
Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.
Skin Contact	IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing and wash it before reuse.
Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain immediate medical attention.
Ingestion	IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Get immediate medical attention.

Most important symptoms and effects, both acute and delayed Causes skin irritation. May cause respiratory irritation. May cause an allergic skin reaction.

Indication of any immediate medical attention and special treatment needed Treat symptomatically

### 5. FIREFIGHTING MEASURES

Suitable Extinguishing Media	In case of fire, use water spray, foam, dry powder or $CO_2$ for extinction. Keep containers cool by spraying with water if exposed to fire.
Unsuitable extinguishing media	Do not use water jet.
Hazards summary	Highly flammable liquid and vapour. May polymerise on heating. Sealed containers may rupture explosively if hot.
Special protective equipment and precautions for fire fighters	A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures Environmental precautions	Eliminate sources of ignition. Wear protective gloves and eye/face protection. Avoid breathing vapours. See Section: 8 Avoid release to the environment. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.
Methods and materials for containment and cleaning up Other advice	Collect spillage. Do not adsorb onto sawdust or other combustible materials. Transfer to a container for disposal or recovery. Use only non-sparking tools. See section: 8, 13

# 7. HANDLING AND STORAGE

HANDLING	Do not use compressed air for filling, discharging or handling. Do not eat, drink or smoke at the workplace. Wash thoroughly after handling. Avoid contact with skin and eyes. Avoid breathing vapours. Use only outdoors or in a well- ventilated area. The vapour is heavier than air; beware of pits and confined spaces. Ground container and receiving equipment. Use explosion proof electrical equipment. Use only non-sparking tools. Take precautionary measures against static discharge.
STORAGE	Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.
	IMPORTANT: Methacrylates stored in bulk must be kept in contact with air (oxygen). The minimum oxygen concentration should be 5%, and ideally kept at 5-8%. Monomer vapours are uninhibited and may form polymers in vent or flame arresters, resulting in blockage of vents.
Storage temperature (°C):	<40°C Preferably not exceeding 30°C.
Storage life	Storage life is dependent upon a number of factors such as stabiliser concentration, oxygen level, temperature and time. Please refer to the Methacrylate Esters Safe Handling Manual or contact the supplier for specific advice.
Incompatible materials:	Polymerisation catalysts, such as peroxy or azo compounds, strong acids, alkalis and oxidising agents. Oxides and salts of transition metals. Organic Nitrogen containing compounds.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Substance	CAS No.	PEL	PEL	PEL	PEL
		(Long term)	(Long term)	(Short term)	(Short term)
		ppm	mg/m3	ppm	mg/m3
Methyl methacrylate	80-62-6	100	410		
		(50*	208*)		

Appropriate engineering controls

Do not eat, drink or smoke at the workplace. Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded. Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Individual protection measures, such as personal protective equipment (PPE) Eye/face protection



Wear eye/face protection. Safety spectacles/goggles/full face shield.

Skin protection



Wear protective gloves.

For splash protection: Butyl; EN 374.

For immersion protection: Butyl; 0.7 mm or greater; EN 374.

See the Methacrylate Monomers Safe Use of Gloves Best Practice Guidelines.

Suitability of gloves should be confirmed with glove manufacturer. Change gloves, if contamination occurs or duration of activity exceeds breakthrough time. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Respiratory protection



Wear respiratory protection.

Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely. A suitable mask with filter type A (EN141 or EN405) may be appropriate. In the event of formation of particularly high levels of vapour a self contained breathing apparatus may be appropriate.

#### PHYSICAL AND CHEMICAL PROPERTIES 9.

Physical state Colour Odour Odour Threshold (ppm) Melting Point (°C) Boiling Point (°C) Flammability (solid, gas) Flammable Limits (Lower) (%v/v) Flammable Limits (Upper) (%v/v) Flash Point (°C) Auto Ignition Temperature (°C) Decomposition Temperature (°C) pН Solubility (Water) Solubility (Other) Partition Coefficient (n-Octanol/water) Vapour pressure (Pascal) Density (g/ml) Vapour Density (Air=1) Particle characteristics Explosive properties Oxidising properties Self accelerating polymerization temperature (SAPT)(°C) Relative Evaporation Rate (Ether = 1) **Refractive Index** Viscosity (mPa. s) Minimum ignition energy (mJ) Heat of Polymerization Heat of Vaporization Dielectric constant Specific heat Electrical resistivity Electrical conductivity Electrical relaxation time Variation of density with temperature

Liquid. Clear/colourless. Characteristic strong and acrid. 0.75 -48 100.36 Not applicable. 2.1 12.5 10 [Closed cup] 435 Not applicable. Not available. Slightly soluble. 1.53g/100g at 20°C Miscible with most organic solvents. 1.38 3700 at 20°C 0.94 at 20°C 3.5 Not applicable. Not applicable. Not applicable. >55 Not available. 1.412 0.53 at 20°C 0.89 - 0.97 at 23°C 54 kJ/mol 39.5 kJ/mol 7.89 at 20°C 1.9 kJ/kg -K 9.311 x 109 Ohm.cm at 25°C 10700 pS/m 11.7 ps -0.00117 g/cm3 per °C

# 10. STABILITY AND REACTIVITY

Reactivity Will exothermically polymerise in the presence of initiators. Chemical stability Stable in the presence of inhibitor and oxygen. Possibility of hazardous reactions Susceptible to polymerisation initiated by prolonged storage or the presence of catalyst. Self accelerating polymerization temperature (SAPT)(°C) : >55 Conditions to avoid Heat and direct sunlight. Incompatible materials Polymerisation catalysts, such as peroxy or azo compounds, strong acids, alkalis and oxidising agents. Oxides and salts of transition metals. Organic Nitrogen containing compounds. Does not decompose up to auto-ignition temperature.

Hazardous decomposition products

#### TOXICOLOGICAL INFORMATION 11

Acute toxicity	
Ingestion	Based upon the available data, the classification criteria are not met.
	Low oral toxicity, but ingestion may cause irritation of the gastrointestinal tract.
Ingestion toxicity data	LD50 (oral) >5000 mg/kg
Inhalation	Based upon the available data, the classification criteria are not met.
	May cause drowsiness and dizziness.
Inhalation toxicity data	LC50 (vapour) 7093 ppm (29.8 mg/l )(4 hour(s) )
Skin Contact	Based upon the available data, the classification criteria are not met.

Skin contact toxicity data	LD50 (dermal) >5000 mg/kg
Skin corrosion/irritation	Causes skin irritation. Repeated and/or prolonged contact may cause dermatitis.
Serious eye damage/irritation	Moderate irritant to rabbit skin. Based upon the available data, the classification criteria are not met. High vapour concentration will cause irritation. Slight irritant to rabbit eyes. (OECD 405)
Sensitisation	May cause an allergic skin reaction. Skin sensitisation has been reported in studies with mice (OECD 429). Evidence of contact sensitisation in man. Not a respiratory sensitizer. Irritant to the respiratory system and high concentrations may aggravate pre-existing conditions.
Aspiration hazard	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Based upon the available data, the classification criteria are not met. No evidence of carcinogenicity. (OECD 451)
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met. In vitro Methyl methacrylate has the potential for induction of mutagenic effects, esp. clastogenicity, however this potential is limited to high doses with strong toxic effects. On the basis of the lack of such effects in vivo Methyl methacrylate is not classified for mutagenicity Salmonella typhimurium (TA1535, 1537, 97, 98, 100) negative (OECD 471) Rodent Dominant Lethal Test negative (OECD 478) In vivo mammalian erythrocyte micronucleus test negative (OECD 474) In vitro mammalian chromosomal aberration test positive (OECD 473) In vitro mammalian cell gene mutation test positive (OECD 476)
Reproductive toxicity	Based upon the available data, the classification criteria are not met. NOAEC (Fetotoxicity, Teratogenicity) (inhalation) (rat) > 2028 ppm (OECD 414) NOAEL (Developmental Toxicity) (oral) (rabbit) 450 mg/kg Body weight
STOT - single exposure	May cause respiratory irritation. Exposure to high concentrations may produce adverse effects on the nasal epithelium.
STOT - repeated exposure	Based upon the available data, the classification criteria are not met. NOEL (oral) (rat) (104 weeks) >2000 ppm NOAEC (inhalation) (rat) (104 weeks) 100 ppm (OECD 453) NOAEC (inhalation) (mouse) (14 weeks) 1000 ppm (OECD 412) Repeated exposure of animals by inhalation to levels at or above the occupational exposure level produces adverse effects on the nasal epithelium (levels of 100 and 400ppm).

# 12. ECOLOGICAL INFORMATION

Ecotoxicity	Harmful to aquatic life. LC50 (fish) (typically) >100 mg/l LC50 (fathead minnow) (96 hour) (static) 130 mg/l EC50 (Daphnia magna) (48 hour) 69 mg/l EC50 (Selenastrum capricornutum) (96 hour) 170 mg/l NOEC (zebra fish) (35 days) (flow through) 8.4 mg/l
Persistence and degradability	Readily biodegradable. Biological Oxygen Demand (BOD 14 DAY): 94.3% Chemical Oxygen Demand (COD): 88% (28 days) Inherent Biodegradation: Dissolved Organic Carbon Removal (DOC removal): >95% (28 days) The substance is substantially removed in biological treatment processes.
Bioaccumulative potential Mobility in soil Other adverse effects	The product has low potential for bioaccumulation. (Log $P_{ow}$ = 1.38). The product is predicted to have high mobility in soil. None known.

## 13. DISPOSAL CONSIDERATIONS

Avoid release to the environment. Decontaminate empty drums before recycling.

### Disposal methods

Dispose of contents/container to hazardous waste in accordance with local, state or national legislation. Incinerate under approved controlled conditions, using incinerators suitable for the disposal of flammable organics. Consult an accredited waste disposal contractor or the local authority for advice.

### 14. TRANSPORT INFORMATION

UN No.	1247
Proper Shipping Name	METHYL METHACRYLATE MONOMER, STABILIZED
Class	3
Packing group	II
Environmental hazards	No.
Special precautions for user	No special requirements.
Transport in bulk according to Annex II of	See below
MARPOL and the IBC Code	
Ship type	2
Pollution category	Υ

### 15. REGULATORY INFORMATION

Regulatory obligations are country/region specific. Compliance statements are available. Please confirm regulatory status for individual country/region with the supplier before placing on the market.

Safety, health and environmental regulations Work SS 5

Workplace Safety and Health (General Provisions) Regulations 2006 (S 134/2006) SS 586-2: 2022 SS 586-3: 2022

### 16. OTHER INFORMATION

The following sections contain revisions or new	1, 3, 4, 7, 12, 13, 15, 16
statements:	
Date of preparation:	1 -February- 2024

### LEGEND

Note: Not all of the following are necessarily contained in this Safety Data Sheet:

PEL: Permissible Exposure Level

\* The company aims to control exposure in its workplace to this limit

Methacrylate monomers are used safely in a wide variety of applications including some areas of personal hygiene. We are aware of some reports suggesting that use of methacrylate monomers in fingernail extension applications may result in loosening or shedding of the nails of the user as well as respiratory or other effects in those exposed to high levels of the vapors. Mitsubishi Chemical Methacrylates Singapore Pte. Limited has performed no technical or clinical testing and has no data to support the use of methacrylate monomers in this application. Under no circumstances should methacrylate monomers be used in this or similar applications.

MEDICAL USE: CAUTION: DO NOT USE IN MEDICAL APPLICATIONS INVOLVING IMPLANTATION IN THE HUMAN BODY. Mitsubishi Chemical Methacrylates Singapore Pte. Limited has performed no clinical testing on the use of this product in any medical application. Mitsubishi Chemical Methacrylates Singapore Pte. Limited has no data to support the use of this product in any medical application. This product was not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. Mitsubishi Chemical Methacrylates Singapore Pte. Limited has neither sought, nor received, approval from any regulatory agency for the use of this product in implantation in the human body or in contact with internal body fluids or tissues.

For further information on the properties and uses, or storage and handling, of Methyl Methacrylate refer to Product data sheet; Methyl Methacrylate (TS/C/2108/4), or the Methacrylate Esters Safe Handling Manual.

It is the responsibility of the end-product manufacturer to identify all market and use-specific regulations and to ensure compliance with these regulations.

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