

Safety Data Sheet

一、Chemicals and Manufacturer Information

Chemical name : Methacrylic acid(MAA)
Other names : -
Recommended use and restricted use : Monomer of polymer
Name of manufacturer, importer or supplier : MMA PLANT, CHEMICALS DIVISION FORMOSA PLASTICS CORPORATION address : No.1 FORMOSA INDUSTRIAL COMPLEX, MAILIAO VILLAGE, YUNLIN COUNTY, TAIWAN
Telephone no : +886 5 6811437
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二、Hazard identification data

Chemical hazard classification : Acute toxic, Category 3(skin) · Corrosive/irritating, Category 1 · Serious damage/irritation to eyes, Category 1 · Specific target organ system toxic · Single exposure, Category 1 · Water hazards (Acute toxicity) , Category 3 · Flammable liquid, Category 4 · Acute toxic, Category 4 (oral) · Acute toxic, Category 4 (Inhale)



Marked content :

Symbol : Corrosion, skeleton and two crossbones

warning : Danger

Hazard warning :

- Flammable liquid
- Harmful if swallowed
- Toxic in contact with skin
- Causes severe skin burns and eye damage
- Harmful by inhalation
- May cause respiratory irritation
- Harmful to aquatic life

Hazard prevention measures :

- Avoid inhalation of dust/smoke/gas/mist/vapour/spray and wear gas mask
- Wearing NOMEX overalls and acid-resistant protective vest
- Wear safety glasses/protective mask
- Wear acid/alkali/rubber gloves
- Dirophobia must be carried on the body
- Wash skin thoroughly after treatment
- When using this product, do not eat, drink or smoke
- Can only be used outdoors or in a well-ventilated area
- If you feel unwell, consult a doctor immediately
- Avoid emissions into the environment
- If swallowed by mistake: Seek medical attention immediately if you feel unwell
- If swallowed by mistake: gargle. Never induce vomiting
- If it gets into the eyes : Wash carefully with water for several minutes · If contact lenses are worn and can be taken out · Remove the contact lens · Continue cleaning
- Remove or take off all contaminated clothing immediately
- Wash contaminated clothing before reuse
- Seal the container and put it in a well-ventilated place
- Keep cool and store in a well-ventilated place
- Locked storage Send contents/containers to approved waste treatment plant for disposal

Other hazards : -

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三、Composition identification data

English name : Methacrylic acid(MAA)
Synonymous name : Alpha methacrylic acid、2 Methyl,2 propemoic acid、Methylacrylic acid
Chemical Abstract Service Registration Number (CAS No.) : 79-41-4
Hazardous ingredients (Ingredient percentage) : 99-100

四、first-aid

First aid methods for different exposure routes : Suck in : 1. Move the patient to fresh air ◦ 2. If breathing stops, give artificial respiration ◦ 3. Get medical attention immediately ◦ skin contact : 1. Rinse skin with running water for 20 minutes ◦ 2. Take off the contaminated clothing when washing and immediately take a safety shower ◦ Wash with soap and water ◦ 3. If irritation persists, continue to rinse ◦ 4. Get medical attention immediately ◦ eye contact : 1. Immediately flush eyes with running water for at least 20 minutes and open the upper and lower eyelids ◦ 2. If irritation persists, continue to rinse ◦ 3. Get medical attention immediately ◦ Ingestion : 1. If the patient is awake and does not have cramps, give 1/2 to 1 cup of water to dilute the chemical ◦ 2. If the patient spontaneously vomits, lean his body forward to reduce the risk of inhalation, and allow him to gargle and give water repeatedly ◦ 3. Get medical attention immediately ◦
The most important symptoms and harmful effects : -
Protection of emergency personnel : C-level protective equipment should be worn to perform first aid in a safe area ◦
Tips for physicians : When the patient inhales, consider giving oxygen. Avoid gastric lavage and vomiting

五、Fire fighting measures

Suitable extinguishing agent : Carbon dioxide, chemical dry powder, water spray, alcohol foam, water mist
Special hazards that may be encountered when extinguishing a fire : Avoid overheating, which can cause a violent explosion due to polymerization reaction in a closed container.
Special fire fighting procedures : 1. Do not drain wastewater to the sewer ◦ 2. Stop the spill before extinguishing the fire. If the spill cannot be stopped and there is no danger around, let the fire finish. If the fire is not extinguished without stopping the spill, the vapor will form an explosive mixture with air and then ignite ◦ 3. Isolate unfired material and protect personnel ◦
Special protective equipment for firefighters : Firefighters must wear full body chemical protective clothing and air respirator ◦ (If necessary, add a flash-resistant aluminum coated jacket)

六、Leakage treatment method

Personal considerations : 1. Notify security personnel ◦ 2. Evacuate non-essential personnel ◦ 3. Remove heat and ignition sources ◦ 4. When cleaning up spills, proper personal protection should be taken to avoid inhalation of vapors ◦ Wear protective gloves/eye protection/face protection ◦
Environmental considerations : Do not allow spills and waste from disposal to enter sewers or other water sources. Do not allow materials to contaminate the groundwater system ◦
Cleaning method : 1. Using dikes, ditches, and dams to stop leaking solutions ◦ 2. Use an inert absorber to absorb spillage (Eg: sand, soil) ◦ 3. 將 Recycling of exudates or use sodium bicarbonate or sodium bicarbonate to carefully neutralize to pH 6 to 9 ◦ 4. The neutralized muddy, contaminated soil and water must be

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disposed of properly ◦ 5. A small amount of dry leak, shovel into the container with a clean shovel, and loosely cover ◦

七、 Safe disposal and storage methods

Dispose :

1. This material is corrosive ◦ 2. All metal containers should be grounded during storage and operation ◦ 3. The product is at 15°C/59°F ◦ 4. Incorrect thawing can cause violent polymerization ◦ 5. Place the frozen bucket at a temperature of 40°C/104°F Thaw in the room for 48 hours. Mix during and after thawing to properly disperse inhibitors ◦ 6. It is forbidden to use steam or electric heating devices, please contact the manufacturer before attempting to dissolve the large volume frozen MAA container ◦

Store :

1. Small deviations above this recommended temperature (7°C/13°F), for materials in transit, can be accepted in a short time (one week) ◦ 2. It is recommended to use an automatic water system with high and low temperature alarms to control a large number of storage temperatures ◦ 3. Tracking equipment with self-limiting electrical tracking function can prevent local freezing in cold weather ◦ 4. Do not use steam ◦ 5. Do not let the temperature of the material fall below freezing ◦ 6. Store in a cool place. Avoid direct sunlight ◦ 7. Materials can burn; indoor storage is limited to areas equipped with automatic sprinklers ◦ 8. All metal containers should be grounded during storage and operation ◦ 9. Being completely anaerobic will make the inhibitor inactive. Do not store in an oxygen-free environment ◦ 9. This product contains an inhibitor to keep it stable during transportation and storage. The effect of the inhibitor depends on the presence of dissolved oxygen. In order to maintain sufficient dissolved oxygen in the solution to avoid polymerization, the monomers of this product must always be in Store in a 5%-21% (air) vapor space with oxygen concentration ◦ 10. Please use the monomer within 1 year to avoid the risk of losing stability or polymerization ◦ 11. Keep container tightly closed ◦ 12. Store materials in containers made of: stainless steel, glass, aluminum, polyethylene

八、 Exposure precautions

engineering control : Local exhaust ◦

Control parameters			
8 hours average daily time Allowable concentration TWA	Short time average Allowable concentration STEL	Maximum allowable Concentration CEILING	Biological index BEIs
20ppm	30ppm	-	-

Personal protective equipment :

Breathing protection : 1. At 200 ppm or less, use air breathing protective equipment containing an organic vapor canister ◦ 2. At higher concentrations, use air-supply breathing protective equipment ◦

Hand protection : Acid and alkali resistant gloves ◦

Eye protection : 1. Protective mask ◦ 2. goggle ◦

Skin and body protection : 1. Acid and alkali resistant protective clothing ◦

Hygienic measures :

1. Take off the contaminated clothing as soon as possible after work, wash it before wearing or discarding it, and you must inform the laundry staff of the hazards of the contamination ◦ 2. No smoking or eating in the workplace ◦ 3. After handling this object, wash hands thoroughly ◦ 4. Keep the workplace clean ◦

九、 Physical and chemical properties

Exterior : liquid	colour : Transparent and colorless
odor : Pungent taste	Melting point : 16°C
Odor threshold : -	Boiling point : 163°C
pH : 2.83 (0.1M)	Flash point : 77°C

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Flammability: -	Test Methods (Open or closed): Open
Decomposition temperature: -	Explosion limit: 1.6 ~ 8.8 %
Auto-ignition temperature: 365°C	Vapor density: 2.97 (air=1)
Vapor Pressure: 0.65mmHg@20°C	Solubility: Miscible with water
density: 1.015 @ 20°C (water =1)	Volatilization rate: -
Octanol/water partition coefficient (log Kow): 0.93	

十、Stability and reactivity

Stability: Stable under normal circumstances
Possible hazardous reactions under special conditions: -
Conditions to avoid: Avoid overheating
Substances to avoid: Peroxides, azo compounds
Hazardous decomposition products: Carbon monoxide(CO), carbon dioxide(CO ₂)

十一、Toxicity information

Route of exposure: Skin, inhalation, ingestion, eyes
symptom: Irritation, burning, pain, vomiting, diarrhea
Acute toxicity:
skin: 1. Corrosive ° 2. May cause chapped skin ° 3. May be absorbed through the skin to cause liver damage and affect the respiratory system °
Inhale: 1. Vapor can cause irritation of upper respiratory tract ° 2. May cause lung congestion and even worsen to bronchitis ° 3. May cause liver damage °
Swallow: 1. Causes severe burning and pain in mouth, throat and lower abdomen ° 2. Vomiting diarrhea and causing perforation of esophagus and stomach wall °
eye: 1. The steam will gently stimulate ° 2. Liquid can cause a severe burning sensation °
LD50 (Test animals、Absorption pathway): 1060 mg/kg (Rat、devour) 500 mg/kg (Rat、skin)
LC50 (Test animals、Absorption pathway): -
Slow toxicity or long-term toxicity: -

十二、Ecological information

Ecotoxicity:
LC50 (Fish): -
EC50 (Aquatic invertebrates): -
Bioconcentration factor (BCF): 3
Persistence and degradability:
1. In lighted water, methacrylic acid can be decomposed by direct photochemical action; In general water, it may be biodegraded °
2. The volatilization effect in the water is quite slow, with a half-life of about 27.5 days in general rivers and about 298 days in lakes ° (Due to adsorption)
3. In the air, methacrylic acid usually exists in a vapor state, and can decompose with hydrogen radicals and ozone generated by photochemical reaction °
half life (air): -
half life (Water surface): -
half life (groundwater): -
half life (Tuou): -
Bioaccumulation: -
Mobility in soil:
In the soil, methacrylic acid easily penetrates into groundwater, but usually it does not hydrolyze. Experimental results show that the soil is mainly decomposed by organisms, and a small part is evaporated °

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Other adverse effects : -

十三、Disposal methods

Disposal methods :

1. Disposal by approved sanitary burial method or incineration method °
2. According to relevant laws °
3. Can not be disposed of by general garbage or sewage disposal methods °

十四、Shipping information

UN number : 2531

UN Shipping Name : Methacrylic acid, stable

Transport hazard classification : Class 8 corrosive substances

Packing category : II

Marine pollutants (yes/no): no

Special delivery methods and precautions : -

十五、Regulatory information

Applicable regulations :

1. Occupational Safety and Health Act
2. Hazardous chemicals labeling and general rules
3. Labor workplace allowable exposure standards
4. Road traffic safety rules
5. Business-level waste storage and disposal method-level facility rules
6. Hazardous chemicals assessment and classification management methods
7. Public Dangerous Goods and Flammable High-Pressure Body Setting Standards and Safety Management Measures
8. Occupational safety and health facilities rules

十六、other information

references	1. CHEMINFO database , CCINFO CD , 2005-3 2. RTECS database , TOMES PLUS CD , Vol. 65, 2005 3. HSDB database , TOMES PLUS CD , Vol. 65, 2005 4. Material Safety Data Sheet, Genium Publishing Corporation, 1997 5. Chem Watch database , 2005-3	
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