	Safety Data Sheet	Crea. date	2007.10.27
		()th	4th
	Product Name : MAA CAS No : 79-41-4	Rev. date	2024.06.01

According to OSHA Hazcom Standard 29 CFR 1910.1200


1. IDENTIFICATION

- A. Product name : MAA(Methacrylic acid)
- B. Recommended use and restriction on use
- General use : Cement Fluidization Material, Fiber Materials, Adhesives, Paint, MAA ester, UP Resin
 - Restriction on use : Not available
- C. Manufacturer/Supplier/Distributor information
- Company name : LX MMA Corporation
 - Address : 58, YeosuSandan 4-ro, Yeosu-City, Jeollanam-do, Korea
 - Emergency telephone number : +82-2-6930-3870
 - Dept : MMA Production team

2. HAZARD IDENTIFICATION

- A. GHS Classification :
- Flammable liquids : Category4
 - Corrosive to metals : Category1
 - Acute toxicity (oral) : Category4
 - Acute toxicity (dermal) : Category3
 - Acute toxicity (inhalation: dust/mist) : Category4
 - Skin corrosion/irritation : Category1A
 - Serious eye damage/eye irritation : Category1
 - Specific targaet organ toxicity-single exposure : Category3
 - Hazardous to the aquatic environment, short-term(Acute) : Category3

B. GHS label elements :

<input type="radio"/> Hazard symbols	<input type="radio"/> Signal words	<input type="radio"/> Hazard statements
	Danger	<input type="radio"/> H227 Combustible liquid <input type="radio"/> H290 May be corrosive to metals <input type="radio"/> H302 Harmful if swallowed <input type="radio"/> H311 Toxic in contact with skin. <input type="radio"/> H314 Causes severe skin burns and eye damage. <input type="radio"/> H318 Cause serious eye damage. <input type="radio"/> H332 Harmful if inhaled <input type="radio"/> H335 May cause respiratory irritation. <input type="radio"/> H402 Harmful to aquatic life.

Precautionary statements :

Prevention <input type="radio"/> P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. <input type="radio"/> P234 Keep only in original packaging. <input type="radio"/> P260 Do not breathe dust/fume/gas/mist/vapours/spray. <input type="radio"/> P261 Avoid breathing dust/fume/gas/mist/vapours/spray. <input type="radio"/> P264 Wash hands thoroughly after handling. <input type="radio"/> P270 Do not eat, drink or smoke when using this product.
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P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
Response
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P321 Specific treatment
P330 Rinse mouth.
P361 Remove/Take off immediately all contaminated clothing.
P363 Wash contaminated clothing before reuse.
P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).
P390 Absorb spillage to prevent material damage.
Storage
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P406 Store in a corrosion resistant/container with a resistant inner liner.
Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification :

- Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No	Contents(%)
2-Methyl-2-propenoic acid	2-Methylacrylic acid	79-41-4	100

4. FIRST AID MEASURES

A. Eye contact :

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 20 minutes and call a doctor/physician.
- Get medical attention immediately.
- Remove contact lenses if worn.

B. Skin contact :

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Take the doctor's examination.

- Wash thoroughly after handling.

C. Inhalation contact :

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact :

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure :

- Not available

F. Notes to physician :

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES

A. Suitable(Unsuitable) extinguishing media :

- AFFF, alcohol-resistant foam, powder, carbon dioxide
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical :

- Above flash point, vapor-air mixtures are explosive within flammable limits noted Section 9 (Physical and chemical properties).
- Polymerization may be caused by elevated temperature, oxidizers, peroxides, or sunlight.
- Vapors can flow along surfaces to distant ignition source and flash back.
- Sealed containers may rupture when heated.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

C. Special protective actions for firefighters :

- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Avoid inhalation of materials or combustion by-products.
- Do not approach the tank surrounded by fire until it is extinguished.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures :

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Handling the damaged containers or spilled material after wearing protective equipment.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.

B. Environmental precautions :

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up :

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount.
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.

7. HANDLING AND STORAGE

A. Precautions for safe handling :

- Do not get in eyes, on skin, on clothing. Do not take internally.
- Use with adequate ventilation.
- Do not breathe vapors/gases/dust.
- In case of inadequate ventilation wear respiratory protection.
- Keep the containers closed when not in use.
- Use non-sparking type tools and equipment, including explosion proof equipment.
- Use connections properly earthed to prevent generation of electrostatic charges.
- Vapours are heavier than air and may travel considerable distances to a source of ignition and flash back.
- Have emergency equipment (for fires, spills, leaks, etc.) readily available.
- Ensure all containers are labelled.
- Do not use, store, spill or pour near heat, sparks or open flame.
- MAA polymerizes at increased temperatures, and in the case of contact with radical donors (e.g. peroxides and azo compounds).
- Uncontrolled exothermic polymerization in closed systems might lead to explosion caused by increasing pressure

B. Conditions for safe storage, including any incompatibilities :

- Store in suitable labelled containers.
- Store the containers tightly closed.
- Store away from heat and sources of ignition.
- Protect from direct sunlight.
- Keep containers placed in cool, well-ventilated areas.
- Have appropriate fire extinguishers available in and near the storage area.
- Store separately from incompatibles.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

A. Exposure limits :

- ACGIH TLV : TWA, 20 ppm (70 mg/m³)
- OSHA PEL : Not available

B. Engineering controls :

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Personal protective equipment :

- Respiratory protection
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.

- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Eye protection
- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.
- Hand protection
- Wear appropriate chemical resistant protective clothing.
- Skin protection
- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

- | | |
|--|---|
| A. Appearance : Clear, colorless liquid | B. Odor : Penetrating odor |
| C. Odor threshold : Not available | D. pH : Not available |
| E. Melting point/Freezing point : 15.4~15.5°C (ECHA) | F. Initial Boiling Point/Boiling Ranges : 161 °C |
| G. Flash point : 77 °C(open cup) | H. Evaporation rate : Not available |
| I. Flammability(solid, gas) : Not applicable | J. Upper/Lower Flammability or explosive limits : 8.7 / 1.6 % |
| K. Vapour pressure : 0.97 hPa (20°C) (ECHA) | L. Solubility : 98 g/L (20 °C) (OECD Guideline 105) (ECHA) |
| M. Vapour density : 2.97 (air=1) | N. Specific gravity(Relative density) : 1.0141 g/cm ³ (20 °C) (ECHA) |
| O. Partition coefficient of n-octanol/water : 0.93 | P. Autoignition temperature : 400 °C (1,013 hPa) (ECHA) |
| Q. Decomposition temperature : Not available | R. Viscosity : 1.38mPa · s (25 °C) (ECHA) |
| S. Molecular weight : 86.09 | |

10. STABILITY AND REACTIVITY

- A. Chemical stability
- Inhibited MAA is stable at room temperature for a limited storage period. Vapors are uninhibited and may form polymers in vents, causing stoppage. Polymerization may be caused by elevated temperature, oxidizers, peroxides, or sunlight.
- B. Possibility of hazardous reactions
- Polymerizes easily, especially on heating or in presence of traces of hydrochloric acid.
 - The product is readily polymerized by light, heat, or oxidants without inhibitor.
- C. Conditions to avoid
- Insufficient inhibitor, incompatibles, heat, flame and ignition sources.
- D. Incompatible materials
- Contact with polymerization catalysts (e.g. peroxides, persulfates), hydrochloric acid, strong oxidizers and other bases (e.g. ammonia, amines).
- E. Hazardous decomposition products
- Oxides of carbon (CO_x)

11. TOXICOLOGICAL INFORMATION

- A. Information on the likely routes of exposure :
- (Respiratory tracts) : respiratory irritation
 - (Oral) : Harmful if swallowed
 - (Eye - Skin) : Causes severe skin burns and eye damage
- B. Delayed and immediate effects and also chronic effects from short and long term exposure :
- Acute toxicity :
 - Oral - LD50 1320 mg/kg Rat (OECD Guideline 401)

- Dermal - LD50 500 ~ 1000 mg/kg Guinea pig (ECHA)
- Inhalation - Mist LC50 7.1 mg/ℓ 4 hr Rat (mixed vapour/aerosol) (OECD TG 403, GLP)
- Skin corrosion/irritation : Corrosive(not reversible), Rabbit (PDII Score : 6.17) (ECHA)
- Serious eye damage/irritation : depending on the concentration and frequency or time of exposure [EU-RAR No.25 (2002)].
- Respiratory sensitization : Not sensitising, Guinea pig (OECD Guideline 406, GLP)
- Skin sensitization : Not available
- Carcinogenicity :
 - * IARC : Not available
 - * OSHA : Not available
 - * ACGIH : Not available
 - * NTP : Not available
 - * EU CLP : Not available
- Germ cell mutagenicity : In vivo mammalian germ cell study: cytogenicity / chromosome aberration
 - : Negative, mouse (Read-across: CAS No. 80-62-6, OECD Guideline 478) (ECHA)
- Reproductive toxicity : Not available
- STOT-single exposure : May cause respiratory irritation.
- STOT-repeated exposure : Not available
- Aspiration hazard : Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity :

- Fish : LC50 85 mg/ℓ 96 hr *Salmo gairdneri* (EPA OTS 797.1400, GLP) (ECHA)
- Crustaceans : EC50 >130 mg/ℓ 48 hr *Daphnia magna*(EPA OTS 797.1300, GLP) (ECHA)
- Algae : EbC50 20 mg/ℓ 48 hr *Selenastrum capricornutum* (OECD Guideline 201, GLP) (ECHA)

B. Persistence and degradability :

- Persistence : 0.93 log Pow (HSDB)
- Degradability : Not available

C. Bioaccumulative potential :

- Bioaccumulative potential : BCF 3.1 (HSDB)
- Biodegradation : 86 % 28 day (Readily Biodegradable, OECD Guideline 301 D, GLP)

D. Mobility in soil : Not available

E. Other adverse effects : Fish, *Brachydanio rerio*, new name: *Danio rerio*, : NOEC, 35d, =10 mg/L, OECD Guideline 210, GLP, Crustaceans, *Daphnia magna*: NOEC, 21d, =53 mg/L, mortality, NOEC, 21d, >=53 mg/L, reproduction, OECD Guideline 211, GLP, Algae, *Selenastrum capricornutum*, new name: *Pseudokirchnerella subcapitata*, : NOEC, 72h, =8.2 mg/L, OECD Guideline 201, GLP (ECHA)

13. DISPOSAL CONSIDERATIONS

A. Disposal methods :

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration

B. Special precautions for disposal :

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG) : 2531

B. Proper shipping name : METHACRYLIC ACID, STABILIZED

C. Hazard Class : 8

D. IMDG Packing group : II

E. Marine pollutant applicable Not applicable

F. Special precautions for user related to transport or transportation measures

- Self-accelerating polymerization temperature(SAPT) =60°C

- Risk of self-accelerated polymerization above 60°C

- But, this product contains polymerization inhibitor and there is no risk of polymerization

- Local transport follows in accordance with Dangerous goods Safety Management Law.

- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

- EmS FIRE SCHEDULE : F-A (General fire schedule)

- EmS SPILLAGE SCHEDULE : S-B (Corrosive substances)

15. REGULATORY INFORMATION

A. National and/or international regulatory information :

POPs Management Law : Not applicable

Information of EU Classification :

* Classification : H312, H302, H314

U.S. Federal regulations :

* OSHA PROCESS SAFETY (29CFR1910.119) : Not applicable

* CERCLA Section 103 (40CFR302.4) : Not applicable

* SARA 302 (EPCRA Section 302 (40CFR355.30)) : Not applicable

* SARA 304 (EPCRA Section 304 (40CFR355.40)) : Not applicable

* SARA 313 (EPCRA Section 313 (40CFR372.65)) : Not applicable

U.S. State Regulations :

* U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island	California Proposition 65
2-Methyl-2-propenoic acid (79-41-4)	Listed	Listed	Listed	Not Listed	Listed	Not Listed

Stockholm Convention listed ingredients : Not applicable

Montreal Protocol listed ingredients : Not applicable

16. OTHER INFORMATION

A. Reference :

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2021.07.01

C. Revision number and Last date revised

- 4th, 2024.06.01

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).

