



MAK Chemicals Inc

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Last revised date : 2021-06-09

Safety Data Sheet(SDS)

1. Identification of the substance/mixture and of the company/undertaking

- 1) Product identifier : ACRYLIC ACID
- 2) Relevant identified uses of the substance or mixture and uses advised against
- o Relevant identified uses
48.Others/Acrylic Esters, SAP(Super Absorbent Polymer), Cross-linking Agent, Chemical Intermediate
 - o Uses advised against
- 3) Supplier information
- o Company name : MAK CHEMICAL, INC.

Address : 1114 Clifton Ave, Suite 4
Clifton, NJ 07013

Phone number : 862 -221-6483

2. HAZARD IDENTIFICATION

- 1) Hazard classification
- Flammable liquids Category 3
 - Acute toxicity(Oral) Category 3
 - Acute toxicity(Dermal) Category 3
 - Acute toxicity(Inhalation:Vapours) Category 3
 - Skin corrosion/irritation Category 1
 - Serious eye damage/eye irritation Category 1
 - Specific target organ toxicity single exposure Category 3(Respiratory tract irritation)
 - Hazardous to the aquatic environment, short-term (acute) Acute 1
- 2) Allocation label elements

Hazard pictograms



- DANGER

Hazard statements

H226 Flammable liquid and vapour
H301 Toxic if swallowed
H311 Toxic in contact with skin
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H331 Toxic if inhaled
H335 May cause respiratory irritation
H400 Very toxic to aquatic life

Precautionary statements

- Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilation/lighting facilities.
P242 Use nonsparking tools.
P243 Take action to prevent static discharges.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 After handling, thoroughly wash the contact area of the product.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a wellventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

- Response

P301+P310 If swallowed: Get medical attention immediately.
P302+P352 Wash with plenty of water and soap.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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 Seek immediate medical attention/doctor.
P312 If you feel uncomfortable, consult a medical institution/doctor.
P320 Specific treatment is urgent(See Section MSDS 4).
P330 Rinse mouth.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P370+P378 In case of fire: Use Suitable extinguishing media to extinguish(Refer Section MSDS 5).

- Storage

P403+P233 Store in a wellventilated place. Keep container tightly closed.
P403+P235 Store in a wellventilated place. Keep cool.
P405 Store locked up.

- Disposal

P501 Dispose of contents/container to ...

3) Other hazards

o Product NFPA Level

Health	Flamm ability	Reactivity
3	2	2

(※ 0 = Insufficient , 1 = Slightly , 2 = ordinary , 3 = Highness , 4 = Very high)

3. Composition/Information on ingredients

Components	Common name	CAS No.	PCT(wt%)
Acrylic acid	Acrylic acid	79-10-7	100

4. FIRST AID MEASURES

1) Following eye contact

- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Seek immediate medical assistance.

2) Following skin contact

- For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Remove and isolate contaminated clothing and shoes.
- Seek immediate medical assistance.
- Wash skin with soap and water.

3) Following inhalation

- Administer oxygen if breathing is difficult.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Give artificial respiration if victim is not breathing.
- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
- Keep victim warm and quiet.
- Move to fresh air.
- Seek immediate medical assistance.

4) Following ingestion

- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Seek immediate medical assistance.

5) Advice to physician

- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media
 - CO₂.
 - Dry chemical.
 - For mixtures containing alcohol or polar solvent: Alcohol-resistant foam.
 - Regular foam.
 - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
 - Use dry sand or earth to smother fire.
 - Water spray.
- Unsuitable extinguishing media
 - Direct water.

2) Special hazards arising from the substance or mixture

- Pyrolytic product
 - During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
 - Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Risk of fire and explosion
 - Can form explosive mixtures at temperatures at or above the flashpoint.
 - Containers may explode when heated.
 - Flammable/combustible material.
 - HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
 - May ignited from heat, friction or contamination.
 - May violently polymerize and result in fire and explosion.
 - Runoff may create fire or explosion hazard.
 - Some may burn but none ignite readily.
 - Vapor explosion hazard indoors, outdoors or in sewers.
 - Vapors may form explosive mixtures with air.
 - Vapors may travel to source of ignition and flash back.
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 - When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Other
 - Contact may cause severe burns to skin and eyes.
 - Fire may produce irritating, corrosive and/or toxic gases.
 - May cause toxic effects if inhaled or ingested/swallowed.
 - Vapors may cause dizziness or asphyxiation without warning.

3) Special protective equipment for firefighters

- Cautions ; Most of liquids are lighter than water.
- Dike fire-control water for later disposal; do not scatter the material.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.

- Fire involving Tanks: Do not get water inside containers.
- Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Move containers from fire area if you can do it without risk.
- Rescuers should put on appropriate protective gear.
- Substance may be transported hot.
- Substance may be transported in a molten form.

6. ACCIDENTAL RELEASE MEASURES

1) Health considerations and protective equipment

- A vapor suppressing foam may be used to reduce vapors.
- All equipment used when handling the product must be grounded.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- Cover with plastic sheet to prevent spreading.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Please note that materials and conditions to be avoided.
- Stop leak if you can do it without risk.
- The very fine particles can cause a fire or explosion, eliminate all ignition sources.

2) Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.
- Runoff may cause pollution.

3) For cleaning up

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.
- Dike and collect water used to fight fire.
- Large Spill: Dike far ahead of liquid spill for later disposal.
- Reduce airborne dust and prevent scattering by moistening with water.
- Use clean non-sparking tools to collect absorbed material.

7. HANDLING AND STORAGE

1) Precautions for safe handling

- All equipment used when handling the product must be grounded.
- Avoid breathing vapors from heated material.
- Avoid prolonged or repeated contact with skin.
- Caution: Heat.

- DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION;.
- Do not enter storage area unless adequately ventilated.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Handling refer to engineering control/personal protection section.
- Loosen closure cautiously before opening.
- Measure atmospheric oxygen concentration and ventilate the area during the operation since low-closed area can cause oxygen deficiency.
- Please note that materials and conditions to be avoided.
- Please note that materials and conditions to be avoided.
- Use care in handling/storage.
- Use only in a well-ventilated area.

2) Conditions for safe storage (including any incompatibilities)

- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
- Keep away from food and drinking water.
- Please note that materials and conditions to be avoided.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Chemical exposure limits, Biological exposure standard

Components	Occupational exposure limits	ACGIH	Biological standard
Acrylic acid	TWA : 2 ppm	Not applicable	Not applicable

2) Appropriate engineering controls

- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

3) Personal protection equipment

- Respiratory protection
 - If high frequency of use or exposure, wear air respirator.
 - Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health Agency.
- Eye protection
 - Wear suitable protective goggles and face shields.
- Hand protection
 - Wear suitable protective gloves.
- Body protection
 - Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless Liquid
Physical state	liquid
Colour	Colorless
Odour	Odor
Odour threshold	0.094 (uL / L)
pH	2.5 (10% solution)
Melting point/freezing point	14 °C
Initial boiling point and boiling range	141°C
Flash point	54°C
Evaporation rate	Not available
Flammability(solid, gas)	Flammable liquid
Upper/lower flammability or explosive limits	8 / 2.4%

Vapour pressure	413 Pa (20 °C)
Solubility(ies)	100 g / 100mL (25 °C, soluble)
Vapour density	2.5
Relative density	1.05
n-octanol/water partition coefficient	log Kow= 0.35 at 25 °C (OECD TG 107)
Auto ignition temperature	395 °C
Decomposition temperature	Not available
Viscosity	No data available
Molecular weight(mass)	72.06

10. STABILITY AND REACTIVITY

1) Stability and hazardous reactivity

- Can form explosive mixtures at temperatures at or above the flashpoint.
- Contact may cause severe burns to skin and eyes.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Flammable/combustible material.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- May cause toxic effects if inhaled or ingested/swallowed.
- May ignited from heat, friction or contamination.
- May violently polymerize and result in fire and explosion.
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- Runoff may create fire or explosion hazard.
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2) Conditions to avoid

- Heat.
- Ignition source(heat, spark, flame, etc.).

3) Incompatible materials

- Combustibles, reducing material.

4) Hazardous decomposition products

- Corrosive/toxic fume.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Irritating, corrosive and/or toxic gas.

11. TOXICOLOGICAL INFORMATION

1) Exposure route information

- Inhalation
 - Can be absorbed in body by inhalation.
- Skin Contact
 - Liquids can be exposed through the eyes, skin and oral.
- Eye Contact
 - Liquids can be exposed through the eyes, skin and oral.
- Ingestion
 - Can be absorbed in body by inhalation or contact skin and the digestive organs.

2) Health hazard information

- Acute toxicity
 - Acute toxicity(Oral)
LD50 33.5 ~ 3200 mg / kg experimental species: Rat, Source: NITE
 - Acute toxicity(Dermal)
LD50 300 ~ 600 mg / kg experimental species: Rat, Source: NITE
 - Acute toxicity(Inhalation:Gases)
No data available
 - Acute toxicity(Inhalation:Vapours)
LC50 3.6 mg / l 4 hr experiment Species: Rat, Source: NITE
 - Acute toxicity(Inhalation:Dust/mist)
No data available
- Skin corrosion/irritation
Skin targets rabbit corrosion / irritation test, highly corrosive, irreversible OECD TG 404, GLP, Source: ECHA
- Serious eye damage/eye irritation
Targeting the rabbit Causes eye damage / irritation test results, corrosive, severe corrosion was diluted substances injected sundries, Source: ECHA
- Respiratory sensitization
No data available
- Skin sensitization

Skin sensitization in guinea pigs amreul target test results are not observed Irritant, Source: ECHA

- Carcinogenicity

3 (IARC)

A4 (ACGHI), Source: IARC, ACGHI

- Germ cell mutagenicity

Vitro mammalian gene mutation test using cultured cells, the metabolic activity-based presence and voice OECD TG 476, GLP vitro unscheduled DNA synthesis using the mammalian liver test results, metabolic activation system in the absence voice OECD TG 482, GLP in vivo mammalian regardless test results chromosomal abnormalities using bone marrow cells, voice OECD TG 475, GLP dominant lethal test in vivo using a mouse, voice GLP, Source: ECHA

- Reproductive toxicity

- Specific target organ toxicity single exposure

Animals degeneration of the liver parenchyma in, liver necrosis, and severe irritation of the respiratory tract, causing inflammation of the lungs, pulmonary edema., Source: NLM

- Specific target organ toxicity repeated exposure

12 months repeated oral toxicity tests using rats, water and food consumption reduction, NOAEL can = 40mg / kg bw / day, 90 days inhalation repeated toxicity tests using the NOAEL Cancer = 375mg / kg bw / day OECD TG 452, GLP rat result, the observed effect on the nasal mucosa search, NOAEL = 0.074 mg / L air OECD TG 413 mice by 13 weeks dermal toxicity test results, the search skin peeling and redness observed in the 1% concentration, edema observed search swelling index = 1 GLP, Source: ECHA

- Aspiration hazard

No data available

12. ECOLOGICAL INFORMATION

1) Aquatic toxicity

- Fish

LC50 27 mg / l 96 hr *Oncorhynchus mykiss* (EPA OTS 797.1400, GLP), Source: ECHA

- Crustacea

EC50 95 mg / l 48 hr *Daphnia magna* (EPA OTS 797.1300, GLP), Source: ECHA

- Aquatic algae

EC50 0.13 mg / l 96 hr Other (*Pseudokirchnerella subcapitata*, EU Method C.3, GLP), Source: ECHA

2) Persistence and degradation

- n-octanol water partition coefficient

0.45 log Kow (25 °C OECD TG 107), Source: ECHA

- Degradation

No data available

- Biodegradation

90 ~ 100% 9 day (rapid degradation, EU Method C.4-A, GLP), Source: ECHA

3) Bioaccumulative potential

3.162 (QSAR), Source: ECHA

4) Mobility in soil

6 ~ 137 Blanket (EPA OTS 796.2750), Source: ECHA

5) Other adverse effects

Crustacean Daphnia magna: NOEC21d = 12mg / L OECD TG 211, GLP, Source: ECHA

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

Every commercial waste producer shall either treat wastes generated from his/her place of business by him/herself or commission the treatment of such wastes to a person who has license for a waste treatment business under Article 26(3), a person who recycles of such wastes under Article 44(2), a person who has installed and operates a waste disposal facility under Article 4 or 5, a person who has completed the registration of a business of discharging wastes into the sea under Article 18 of the Marine Environment Management Act.

2) Precautions (including disposal of contaminated container of package)

Do not allow spill material to enter sewers, storm water drains, soil, etc.

14. TRANSPORT INFORMATION

1) UN No. : 2218

2) Proper shipping name : ACRYLIC ACID, STABILIZED

3) Class or division : 8

4) Packing group : II

5) Marine pollutant : Not applicable

6) Special safety response for transportation or transportation measure :

Emergency measures in case of fire : F-E

Emergency measures in the effluent : S-C

- ADR

· Tunnel restriction code : D/E

- IMDG

· Marine pollutant : Not applicable

- Air transport(IATA)

· UN No. : 2218

· Proper shipping name : ACRYLIC ACID, STABILIZED

· Class or division : 8

· Packing group : II

15. REGULATORY INFORMATION

● Global Inventory - USA. Toxic Substances Control Act (TSCA) Chemical Substances Inventory (12 April 2018)

Not applicable

● Other regulations - EPCRA (SARA Title III) Section 302 Extremely Hazardous Substance (EHS) (40 CFR 355, Appendix A)

Not applicable

- Other regulations - OSHA Hazard Communication Standard: On One of the Floor Lists of the OSHA HCS (29 CFR 1910.1200)

Not applicable

- Other regulations - EPCRA (SARA Title III) Section 313 Toxic Chemical Release Inventory (TRI) Reporting for RY 2013 (as amended Sep. 30, 2014)

Not applicable

- Other regulations - CERCLA Hazardous Substances [other than radionuclides] (40 CFR 302.4) (as amended by 75 FR 78918, Dec. 17, 2010)

Not applicable

- Other regulations - RCRA Appendix VII: Hazardous Wastes (40 CFR 261, App. VII, Basis for Listing Hazardous Waste)

Not applicable

- Other regulations - CERCLA. Radionuclides and their Reportable Quantities (40 CFR 302.4, App. B)

Not applicable

- Other regulations - RCRA D List of Characteristic Hazardous Wastes (40 CFR 261.21-24)

Not applicable

- Other regulations - RCRA F List of Hazardous Wastes from Non-Specific Sources (40 CFR 261.31(a)) (as amended by 73 FR 31756, June 4, 2008)

Not applicable

- Other regulations - RCRA K List of Hazardous Wastes from Specific Sources (40 CFR 261.32)

Not applicable

- Other regulations - RCRA P List of Hazardous Wastes (40 CFR 261.33(e) and 40 CFR 302 [CERCLA])

Not applicable

- Other regulations - RCRA U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA], as amended 75 FR 78918, Dec 17, 2010)

Not applicable

- Other regulations - DOT Hazardous Materials Table Listings (49 CFR 172.101, as amended through October 31, 2013)

Not applicable

- Other regulations - EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Respo

Not applicable

16. OTHER INFORMATION

1) Reference

- CAMEO Chemicals
- ECHA
- EPA
- HSDB
- ICSC

- NITE
- NLM
- OSHA
- pubchem

2) Print date : 2021-06-09

3) Revision date

- o Revised date count : 0
- o Last revised date : 2021-06-09
- o Last revised history : Revised for changing CHARMs system

4) Other

- Self Accelerating Polymerization Temperature (SAPT) : 52°C
- This product is stabilized by addition of polymerization inhibitor (MEHQ).
- 14. TRANSPORT INFORMATION / Air transport(IATA) / Subsidiary risk : 3