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Date: 26.11.21

BETAINE ANHYDROUS

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

Product name: Betaine Anhydrous
Chemical name: Trimethylammonioacetate; Glycine betaine

1.2. Recommended use of the chemical and restrictions on use

Identified uses: For industry use only.
Uses advised against: No data available

SECTION 2: Hazards identification

Physical hazards: Not classified.
Health hazards: Not classified.
OSHA hazard(s): Not classified.

Label elements

Hazard symbol: No symbol.
Signal word: Not available.
Hazard statement: Not available.

Precautionary statement

Prevention: Not available
Response: Not available
Storage: Not available
Disposal: Not available.
Hazard(s) not otherwise: Not classified.

SECTION 3: Composition / information on ingredients

3.1. Substances

Chemical Name	Molecular Formula	M.W.	CAS No.	Weight Percent
Betaine	$C_5H_{11}NO_2$	117.15	107-43-7	98-100

SECTION 4: First aid measures

Inhalation

If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
Call a physician if symptoms develop or persist.

Skin contact

Rinse skin with water/shower. Get medical attention if irritation develops and persists

Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.

Most important symptoms/ effects, acute and delayed

Gastrointestinal disturbances.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.
General information
Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic)reactions must receive immediate medical attention.

SECTION 5: Firefighting measures

5.1. Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials: water, foam, dry chemical or CO_2.

5.2. Unsuitable extinguishing media
None known.

5.3. Specific hazards arising from the chemical
No unusual fire or explosion hazards noted

5.4. Special protective equipment and precautions for firefighters
Wear suitable protective equipment.

5.5. Fire-fighting equipment/instructions
Use water spray to cool unopened containers. As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

5.6. Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Avoid inhalation of dust from the spilled material. Wear appropriate personal protective equipment.

6.2. Methods and material for containment and cleaning up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid the generation of dusts during clean-up. For waste disposal, see section 13 of the MSDS. Clean surface thoroughly to remove residual contamination.

SECTION 7: Handling and storage

7.1. Technical measures
Handle preventing formation of airborne dust. Wearing protective equipment such as dust mask and protective glasses is recommended because this substance may cause some irritation by inhalation. Cautions of the deteriorations to depend on light.

7.2. Precautions for safe handling
Handle it under local exhaust ventilation or in the place with a whole exhaust ventilation system.

7.3. Conditions for safe storage, including any incompatibilities
Store in a cool and dark place avoiding high temperature, humidity and direct sun-light because of its hygroscopic property.

7.3. Packing
Storing in a plastic or paper container or bag, etc and sealing it is preferable to avoid moistening.

SECTION 8: Exposure controls/ personal protection
8.1. Engineering controls
Handle with caution not to cause dust especially in a room. Use local exhaust ventilation depending on the situation. It is preferable to install a hand and eye washer near the handling place and show its place clearly.
8.2. Appropriate engineering controls
Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure.
8.3. Respiratory protection
In case of insufficient ventilation: Effective dust mask.
8.4. Eye/ face protection
Safety glasses with side-shields.
8.5. Hand protection
Protective gloves.
8.6. Skin and body protection
Wear suitable protective clothing, gloves and eye/face protection.
8.7. General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: Physical and chemical properties
Appearance: White crystalline powder.
Physical state: Solid.
Odour: Odorless or weak particular odor.
pH: 5.0-7.0 (10% solution in water)
Melting point/freezing point: 293°C
Boiling Point/Range: Not available.
Evaporation rate: Not available.
Flash point: Not available.
Flammability (solid, gas): Not applicable.
Vapor pressure: Not applicable.
Viscosity: Not applicable.
Solubility in water: 160g/100g (20℃)
Solubility (other): Ethyl alcohol; 8.7g/100g (20℃)
Decomposition temperature: Not applicable.

SECTION 10: Stability and reactivity
10.1. Reactivity
No reactivity hazards known.
10.2. Chemical stability
Chemically stable. Dangerous reaction will not occur by air, light or humidity.
10.3. Conditions to avoid
Hygroscopic; protect from moisture.
10.4. Materials to avoid
Strong bases, strong oxidizing agents.
10.5. Hazardous decomposition products
Risk for formation of trimethylamine in hot, strongly alkaline solution.

SECTION 11: Toxicological information

Ingestion
Due to lack of data the classification is not possible.
Acute toxicity
LD50 Intravenous - mouse - 830 mg/kg
LD50 Oral - rat -11179 mg/kg
Inhalation
Due to lack of data the classification is not possible.
Skin contact
Due to lack of data the classification is not possible.
Eye contact
Due to lack of data the classification is not possible.
Mutagenicity Data
Betaine has shown no genotoxic effects in metaphase analysis of human lymphocytes, bacterial reverse mutation assay, and mouse micronucleus test.

SECTION 12: Ecological information

12.1. Ecotoxicity

Algae: EC50/72h/algae 1199 mg/L (Desmodesmus subspicatus）
Daphnia: EC50/48hr/daphnia 4335 mg/L
COD_{Cr}: 14 mg/g ; BOD5: 720 mg/g

12.2. Persistence and degradability

Readily biodegradable, according to appropriate OECD test. Biological degradability (28d):88% (Betaine)

12.3. Bioaccumulative potential

Bioaccumulation is unlikely

12.4. Mobility in soil

The product is water soluble, and may spread in water systems.

SECTION 13: Disposal considerations

13.1. Disposal instructions

Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

13.2. Local disposal regulations

Not available.

13.3. Hazardous waste code

Not available.

13.4. Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

13.5. Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14: Transport information

Not dangerous goods in the meaning of ADR/RID, ADNR, IMDG-Code, ICAO/IATA-DGR.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No information available.

SECTION 15: Regulatory information

US federal regulations
CERCLA/SARA Hazardous Substances - Not applicable.
All components are on the U.S. EPA TSCA Inventory List.
Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories:
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No
SARA 302 Extremely hazardous substance
No
SARA 311/312 Hazardous chemical
No
Other federal regulations
Safe Drinking Water Act (SDWA): Not regulated.
Food and Drug Administration (FDA): Not regulated.
US state regulations
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

SECTION 16: Other information

References: Not available.
Other Special Considerations: Not available.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Tradeasia International Pte. Ltd. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Tradeasia International Pte.Ltd. Has been advised of the possibility of such damages.