济南久安酯类化工有限公司
JINAN JIUAN ESTER CHEMICAL CO., LTD
CHEMICAL INDUSTRIAL PARK, ZHANGQIU CITY, SHANDONG PROVINCE, CHINA

SDS-021E-2016

SAFETY DATA SHEET

Betaine

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier	Betaine
Chemical name	Trimethylammonioacetate; Glycine betaine
Company name	Jinan Jiuan Ester Chemical Co., Ltd.
Address	Chemical Industrial Park, Zhangqiu City, Shandong Province, China
Telephone	0086-531-82687186
Website	www.pengbobio.com
E-mail	sales@pengbobio.com

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

Non-hazardous components

BetaineAnhydrous

Chemical name	Molecular formula	M.W.	EINECS No.	CAS No.	Weight percent
Betaine	$C_5H_{11}NO_2$	117.15	203-490-6	107-43-7	98-100

Betaine Monohydrate

Chemical name	Molecular formula	M.W.	EINECS No.	CAS No.	Weight percent
Betaine Monohydrate	$C_5H_{11}NO_2 \cdot H_2O$	135.16	209-684-7	17146-86-0	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 importantsymptoms /effects, acute anddelayed
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 guidancefrom an occupational health physician or other licensed health-care provider familiar withworkplace chemical exposures. In the United States, the national poison control center phonenumber is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing isdifficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic)reactions must receive immediate medical attention.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials. Water. Foam. Dry chemical or CO_2.

Unsuitable extinguishingmedia
None known.

Specific hazards arising fromthe chemical
No unusual fire or explosion hazards noted

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

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.

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions,protective equipment andemergency 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.
Methods and materials 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

Technical measures:	Handle preventing formation of airborne dust. Wearing protectiveequipment such as dust mask and protective glasses isrecommended because this substance may cause some irritation byinhalation. Cautions of the deteriorations to depend on light,
Precautions for safe handling	Handle it under local exhaust ventilation or in the place with a whole exhaust ventilation system.
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.
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

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.
Appropriate engineering controls	Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure.
Respiratory protection	In case of insufficient ventilation: Effective dust mask.
Eye/face protection	Safety glasses with side-shields.
Hand protection	Protective gloves.
Skin and body protection	Wear suitable protective clothing, gloves and eye/face protection
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 ℃
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

Reactivity	No reactivity hazards known.
Chemical stability	Chemically stable. Dangerous reaction will not occur by air,light or humidity..
Conditions to avoid	Hygroscopic; protect from moisture.
Materials to avoid	Strong bases,strong oxidizing agents.
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

Ecotoxicity	Algae: EC50/72h/algae 1199 mg/l(Desmodesmus subspicatus） Daphnia: EC50/48hr/daphnia 4335 mg/L COD_{Cr}: 14 mg/g ; BOD_5: 720 mg/g
Persistence and degradability	Readily biodegradable, according to appropriate OECD test. Biological degradability (28d):88% (Betaine)
Bioaccumulative potential	Bioaccumulation is unlikely.
Mobility in soil	The product is water soluble, and may spread in water systems..

SECTION 13. DISPOSAL CONSIDERATIONS

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.
Local disposal regulations	Not available.
Hazardous waste code	Not available.
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).

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. TRANSPORTATION 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 hemical 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 event shall Jinan Jiuan Ester Chemical Co., 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 Jinan Jiuan Ester Chemical Co., Ltd. has been advised of the possibility of such damages.

End of Safety Data Sheet

JINAN JIUAN ESTER CHEMICAL CO., LTD