Jinan Jiuan Ester Chemical Co., Ltd.
CHEMICAL INDUSTRIAL PARK, ZHANGQIU CITY, SHANDONG, CHINA

SAFETY DATA SHEET

Betaine Citrate

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier Betaine Citrate
Chemical name 2-(Trimethylammonio)acetate compound with 2-hydroxypropane-1,2,3-tricarboxylic acid
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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Molecular formula</th>
<th>M.W.</th>
<th>EINECS No.</th>
<th>CAS No.</th>
<th>Weight percent</th>
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</thead>
<tbody>
<tr>
<td>Betaine Citrate</td>
<td>C₁₁H₁₉NO₉</td>
<td>309.27</td>
<td>241-648-6</td>
<td>17671-50-0</td>
<td>98-100</td>
</tr>
</tbody>
</table>
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

Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials. Water. Foam. Dry chemical or CO2.

Unsuitable extinguishing media
None known.

Specific hazards arising from the 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 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.
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

Precautions for safe handling
Clean equipment and work surfaces with suitable detergent or solvent after use. Remove contaminated clothing, gloves and wash before reuse. Wash hands and other exposed skin thoroughly. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Biological limit values
No biological exposure limits noted for the ingredient(s).

Exposure guidelines
No exposure standards allocated.

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.

pH
2-3 (10% solution in water)

Melting point/freezing point
134 - 140 °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
Freely soluble.

Solubility (other)
Soluble in alcohol

Decomposition temperature
Not applicable.
SECTION 10. STABILITY AND REACTIVITY

Reactivity
No reactivity hazards known.

Chemical stability
Material is stable under normal conditions.

Conditions to avoid
Hygroscopic; protect from moisture.

Materials to avoid
Strong bases, strong oxidizing agents.

Hazardous decomposition products
Risk for formation of trimethylamine and hydrochloric acid in hot, strongly alkaline solution.

SECTION 11. TOXICOLOGICAL INFORMATION

Ingestion
Due to lack of data the classification is not possible.

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.

Symptoms related to the physical, chemical, and toxicological characteristics
Nausea. Diarrhea.

Delayed and immediate effects
Cerebral edema. Hypermethioninemia.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
No ecotoxicity data noted for the ingredient(s).

Persistence and degradability
No data is available on the degradability of this product.

Bioaccumulative potential
Not available.

Mobility in soil
Not available.

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

DOT
Not regulated as a hazardous material by DOT.

IATA
Not regulated as a dangerous good.
Transport in bulk according to Annex II of MARPOL. No information available.

**SECTION 15. REGULATORY INFORMATION**

**European/International Regulations:**

- **Hazard Symbols:** XI, XN.
- **Risk Phrases:** R20/21/22 Harmful by inhalation, in contact with skin and if swallowed. R36/37/38 Irritating to the eyes, skin and the respiratory system.
- **Safety Phrases:** S 24/25 Avoid contact with skin and eyes. S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 36 Wear suitable protective clothing. S 39 Wear eye/face protection.

**WGK (Water Danger/Protection):** 3

**US federal regulations**

- CERCLA/SARA Hazardous Substances - Not applicable.
  All components are on the U.S. EPA TSCA Inventory List.

**Other federal regulations**

- **Safe Drinking Water Act (SDWA):** Not regulated.
- **Food and Drug Administration (FDA):** Not regulated.
- **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.