SAFETY DATA SHEET
Choline Chloride

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier
Choline Chloride

Chemical name
(2-Hydroxyethyl)trimethylammonium chloride

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
Acute toxicity, Oral: Acute Tox. 4
Serious eye damage: Eye Irrit. 2
Skin corrosion/Irritation: Skin Irrit. 2
Specific target organ toxic - repeated contact: STOT RE 2

OSHA hazard(s)
Not classified.

GHS Label elements

Hazard symbol

Signal word
Warning

Hazard statement
H315 Causes skin irritation.
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary statement
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

RS

Hazard symbol(s)
Xi

R-phrase(s)
R36/37/38

S-phrase(s)
S26;S36
Hazard(s) not otherwise 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 number</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choline Chloride</td>
<td>(CH₃)₃N(Cl)CH₂CH₂OH</td>
<td>139.62</td>
<td>200-655-4</td>
<td>67-48-1</td>
<td>99</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
Irritation of eyes and mucous membranes.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and 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.

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

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/PERSONAL 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

Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).

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

Colorless or white crystals or crystalline powder.

Physical state

Solid.

Odour

Odorless.

pH

4-7 (10% solution in water)

Melting point/freezing point

446 - 581 °F (230 - 305 °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  Very soluble.
Solubility (other)  Freely soluble in alcohol and in methanol; slightly soluble in acetone.
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  Based on available data, the classification criteria are not met.
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  Related material: Nausea, Vomiting, Diarrhea, Salivation, Dizziness, Tearing, Sweating, Blurred vision, Depression, Seizures. It is not known if this material causes the same effects.
Delayed and immediate effects  Related material: High blood pressure. It is not known if this material causes the same effects.
Acute toxicity  LD50 Oral - rat - 3,400 mg/kg

SECTION 12. ECOLOGICAL INFORMATION
Ecotoxicity  EC50  Freshwater algae  500 mg/l, 72 hours  LC50  Freshwater fish > 10000 mg/l, 96 hours
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 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)

- Immediate Hazard: Yes
- 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:

- 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.