

MATERIAL SAFETY DATA SHEET

Choline chloride 50%

1. PRODUCT AND COMPANY IDENTIFICATION

Product: Choline chloride 50% Corn Cob

Manufacturer Name and Address:

CANGZHOU HUAYOU IMPORT & EXPORT TRADE CO., LTD.

2. COMPOSITION / INFORMATION ON INGREDIENTS

| Component | CAS Number | Percent | OSHA hazard category |
|------------------|------------|---------|----------------------|
| CHOLINE CHLORIDE | 67-48-1 | 50% | Hazardous |
| CORN COB | ----- | 50% | Non-hazardous |

3. HAZARDS IDENTIFICATION

Emergency Overview:

CAUTION! .May cause respiratory tract irritation.

Product Description

Appearance: yellow brown little granule

Odor: weak odor.



Potential health effects:

Routes of exposure: Skin, eyes, inhalation, ingestion.

Immediate effects:

Skin: May cause slight skin irritation. May cause allergic skin reaction. Symptoms of exposure may include: Crusting, scaling, weeping and itching of skin.

Eyes: Exposure to liquid May cause eye irritation. Symptoms of exposure may include: Eye irritation or burning sensation.

Inhalation: May cause respiratory tract irritation.

Ingestion: Essentially non-toxic.

Mutagenic: Does not show mutagenic potential in Ames test.

Target organ effects: Overexposure (prolonged or repeated exposure) may cause: Local irritation at the site of exposure Allergic reaction and local irritation of the skin

Medical conditions which may be aggravated by exposure:

Significant exposure to this chemical may adversely affect people with acute or chronic disease of the: Respiratory Tract, Skin and Eyes

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4. FIRST AID MEASURES

- Skin: Flush skin with plenty of water for at least 15 minutes. Get medical attention if symptoms occur. Wash clothing before reuse.
- Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention.
- Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and get medical attention.
- Ingestion: If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. Get medical attention.

5. FIRE FIGHTING MEASURES

NFPA: Health: 1 Flammability: 0 Reactivity: 0

Flammable properties

Flash point (test method): No information.

Flammable limits in air, % by volume:

Upper: No information.

Lower: No information.

Products of combustion: In the presence of sufficient
may produce oxides of nitrogen and carbon dioxide.



Extinguishing Media: Dry chemical, sandy soil, chemical foam or carbon dioxide.

Fire Fighting Instructions: Water spray should be used to cool fire-exposed structures and vessels. Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation.

Fire Fighting Environmental Concerns: Thoroughly decontaminate bunker gear and other fire-fighting equipment before reuse.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Instructions

See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area. Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in well-ventilated area. Clean up small spills by using a nonflammable absorbent or flushing sparingly with water. Contain larger spills with nonflammable diking or absorbent. Clean up by vacuuming or sweeping.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.

7. HANDLING AND STORAGE

Handling:

Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

Storage:

Do not store with incompatible materials. See Section 10. Stability and Reactivity. Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

Protective Equipment

A safety shower and eyebath should be readily available.

Skin protection:

Wear impervious clothing and gloves to prevent contact. Neoprene is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection:

Wear chemical goggles when there is a reasonable chance of eye contact.

Respiratory protection:

Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH.

Comments: No exposure guidelines have been established by ACGIH or OSHA.

No IDLH level has been established by NIOSH.

9. PHYSICAL AND CHEMICAL PROPERTIES

Slightly soluble in water, PH Value: 7, neutral, m.p.: >280°C carbonization

10. STABILITY AND REACTIVITY

Stability: Stable.

Hazardous Combustion or Decomposition Products:

Thermal decomposition products may include oxides of nitrogen and carbon.

Hazardous Polymerization: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Component Toxicological Information

Choline is found in many plant and animal tissues, chiefly as the major component of the lipid, lecithin (phosphatidylcholine). Choline has several important roles in the human body. For example, it is essential for formation of the neurotransmitter, acetylcholine, affects mobilization of fat from the liver and as a lipid component is part of cell membranes .

Acute Exposure:

- Oral LD50: 3400-11000 mg/kg (rats);
choline chloride is practically non-toxic to animals by ingestion. In humans, single oral doses of 10000 mg produced no obvious pharmacodynamic response. The acute oral human LD50 has been estimated to be in the range of 200,000 to 400,000 mg per person.
- Inhalation LC50: Studies to establish the Inhalation LC50 were not conducted.
- Skin: In a European study summary with few experimental details, choline chloride was reported to be not irritating to rabbit skin when dosed at 50% in a water/silicabased vehicle. However, based on the reported pH of 4.7 (10% aqueous), the potential for slight irritation may exist . The potential for skin sensitization in humans is inconclusive. Skin sensitization was reported in one individual exposed to 1% aqueous choline chloride, but sensitization was not observed when ten additional humans were tested at 1%. Studies to establish the Acute Dermal LD50 were not conducted.
- Eye: In a European study summary with few experimental details, choline chloride was reported to be not irritating to rabbit eyes when dosed at 50% in a water/silicabased vehicle. However, based on the reported pH of 4.7 (10% aqueous), the potential for slight irritation may exist.
- Mutagenicity: Not mutagenic in several in vitro tests (e.g., Ames Test). Not tested in vivo.
- Carcinogenicity: No information.
- Reproductive/
Developmental
Effects: Pregnant mice were exposed to choline chloride in the diet for 18 days at the very high concentrations of 10000 ppm, 25000 ppm, 50000 ppm and 100000 ppm. No maternal toxicity, fetotoxicity or teratogenicity was observed at 10000 ppm (equivalent to 2000 mg/kg/day). Maternal toxicity and fetotoxicity were observed at the higher doses. No other studies of acceptable quality and/or relevant to workplace

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exposure (oral, dermal or inhalation routes) were available. Since choline is a normal & important bodily constituent and since the fetotoxicity was observed only at very high, maternally toxic doses, it is unlikely that choline chloride is uniquely toxic to the conceptus.

Repeated Exposure: No experimental animal studies of acceptable quality and/or relevant to workplace exposure (oral, dermal or inhalation routes) available. In medical treatment of adult humans via the oral route for disease, the following repeated exposure (dosing regimen) to choline chloride is acceptable. Initially, doses of 1000 mg four times daily with the amount increased over a 3-8 week period to a maximum of 4000 mg to 5000 mg four times daily.

12.ECOLOGICAL INFORMATION

Ecotoxicity: Choline chloride is practically non-toxic to aquatic species in acute toxicity tests.

Fish, (*Limanda limanda*) 96-hr. LC50 >1000 ppm.

Fish, (*Leuciscus idus*) 96-hr. LC50 >10000 ppm.

Crustacean, Water Flea (*Daphnia magna*) 48-hr. EC50 >500 ppm

Crustacean, Shrimp (*Crangon crangon*) 96-hr. EC50 >1000 ppm

Algae (*Scenedesmus subspicatus*) 72-hr. EC50 >500 ppm.

Bacteria (*Pseudomonas putida*) 17-hr. EC50 = 133 ppm.



Environmental Fate:

Degradation: Choline chloride was determined to be biodegradable in several studies. For example, > 50% degradation was reported with activated sludge after 5 days (Method DEV H5 DIN 38409, Teil 51-Germany). In MITI Tests, 93.5% degradation was reported after 14 days using activated sludge in one study and >30% degradation was reported in another study with unadapted activated sludge after 14 days.

Bioaccumulation: The measured log n-octanol/water partition coefficient was 3.77. This indicates low potential for bioaccumulation.

13. DISPOSAL CONSIDERATIONS

Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete. Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste.

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14. TRANSPORT INFORMATION

US Department of Transportation:

Shipping name: NOT REGULATED MATERIAL (CHOLINE CHLORIDE)

Hazard class: Not regulated

ICAO/IATA:

Proper Shipping Name: NOT REGULATED MATERIAL (CHOLINE CHLORIDE)

Hazard Classification: Not Regulated.

IMDG:

Proper Shipping Name: NOT REGULATED MATERIAL (CHOLINE CHLORIDE)

Hazard Class: Not Regulated.

Flash point (test method): No information.

Transport Canada

Schedule B Code (export): 2923.10.0000

Harmonization Code (import): 29231000



15. REGULATORY INFORMATION

U.S. STATE REGULATIONS

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

U.S. FEDERAL REGULATIONS

TSCA Inventory: We certify that all components are either on the TSCA inventory or qualify for an exemption.

Environmental Regulations:

SARA 311:

Acute health: No

Chronic health: No

Fire: No

Sudden release of pressure: No

Reactive: No

INTERNATIONAL REGULATIONS

International Chemical Inventory

Listed on the chemical inventories of the following countries or qualifies for an exemption:

AUSTRALIA, CHINA, CANADA, EUROPE, KOREA, PHILIPPINES, JAPAN

16. OTHER INFORMATION

Hazard ratings This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

NFPA: Health: 1 Flammability: 0 Reactivity: 0

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