MATERIAL SAFETY DATA SHEET

For Emergencies Involving a Spill, Leak, Fire, Exposure or Accident Contact:
CHEMTREC (800) 424-9300

Taminco, Inc.
1950 Lake Park Drive
Smyrna, Georgia 30080
For Product Information:
(800) 426-3820

SECTION 1: IDENTIFICATION

CHOLINE CHLORIDE
(Crystallized Technical - 97%)

HMIS HAZARD RATINGS
Health 1
Flammability 1
Reactivity 0
0=Least; I=Slight
2=Moderate; 3=High
4=Extreme

SECTION 2: PRODUCT COMPONENTS

INGREDIENTS	CAS#.	WT.%
Choline chloride	67-48-1	97

Refer to Section 8 for occupational exposure limits.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a white, crystalline solid with a slight amine odor. It is not defined as flammable or combustible but will burn under fire conditions. Very high concentrations of dust in the air may present a dust explosion hazard.

CAUTION! Causes eye, skin and respiratory irritation. May be harmful if inhaled or swallowed.

SECTION 4: EMERGENCY and FIRST AID PROCEDURES

INGESTION: Induction of vomiting is not necessary due to spontaneous vomiting from toxic doses. Get immediate medical attention.
SKIN CONTACT: Wash contact area thoroughly with soap and water until no traces of the chemical remain. Remove contaminated clothing immediately and launder before reuse. Get medical attention if irritation develops.
EYE CONTACT: Immediately flush eyes with water for at least 15 minutes while lifting the upper and lower lids. Get immediate medical attention.
INHALATION: Remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult have qualified personnel administer oxygen. Get immediate medical attention.

SECTION 5: FIRE and EXPLOSION HAZARD DATA

FLASH POINT: None
METHOD: Not applicable
FLAMMABLE LIMITS: (vol % in air) Not applicable
AUTOIGNITION TEMPERATURE: Not available
EXTINGUISHING MEDIA: Water fog, carbon dioxide, dry chemical, foam.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area of all non emergency personnel. Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus. Fight fire from upwind and cool exposed intact containers and structures with water spray or stream at maximum range.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Decomposition and combustion products may be hazardous. High concentrations of dust suspended in air may present a dust explosion hazard.
AUTOIGNITION TEMPERATURE: Not available

SECTION 6: ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear appropriate protective clothing to prevent eye and skin contact and appropriate respirator to prevent overexposure. Sweep up material taking care not to generate airborne dust. Collect into closable containers for proper disposal. Prevent runoff to storm sewers and ditches leading to natural waterways. Report spill as required by local and federal regulations.

SECTION 7: HANDLING and STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Protect containers from physical damage. Store in a cool, dry area away from oxidizers. Keep containers tightly closed and away from moisture. This material is very hygroscopic with crystals tending to settle and even to cake in storage.

Avoid eye and skin contact. Avoid breathing dusts. Use only with adequate ventilation and appropriate protective equipment.Immediately remove and launder contaminated clothing before re-use. Wash thoroughly after handling and before eating, drinking, smoking or using toilet facilities. Keep away from excessive heat and moisture.

OTHER PRECAUTIONS: Keep containers tightly closed. Follow all MSDS precautions in handling empty containers.

SECTION 8: EXPOSURE CONTROLS and PERSONAL PROTECTION

INGREDIENTS	CAS#.	EXPOSURE LIMITS
Choline chloride	67-48-1	None established

RESPIRATORY PROTECTION: Use NIOSH approved full face-piece respirator with dust/mist cartridges if needed. For higher concentrations an approved supplied air respirator (with escape bottle if required) or self-contained breathing apparatus may be required. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with OSHA 19310.134 and good Industrial Hygiene practice.
VENTILATION: Provide local exhaust ventilation as appropriate to minimize worker exposures. General ventilation is not recommended as the sole means of controlling worker exposures.
PROTECTIVE CLOTHING: Rubber or other impervious gloves are required. Impervious apron, boots and other clothing are recommended if needed to prevent contact or if splashing is possible.
OTHER PROTECTIVE EQUIPMENT: For operations where contact can occur, a safety shower and an eye wash facility should be immediately available.
EYE PROTECTION: Chemical safety goggles required.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

BOILING POINT (@760 mmHg): Not applicable
VAPOR PRESSURE (@ 20°C mm Hg): Not applicable
VAPOR DENSITY (Air=1): Not applicable
SOLUBILITY IN WATER: Very soluble
pH: 5-7 (75% in water)

SPECIFIC GRAVITY (H20=1): Not available
VOLATILE: 0%
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL: Not available
MELTING POINT: 244 - 247C (471 - 477F)

APPEARANCE AND ODOR: Solid white crystals with a slight amine odor. No odor data is available.

SECTION 10: STABILITY and REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Excessive heat, moisture or wet areas.
INCOMPATIBILITY: Oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield toxic carbon dioxide, carbon monoxide, oxides of nitrogen and chlorides.
HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

EYE CONTACT: May cause eye irritation with pain and blurred vision.
SKIN CONTACT: May cause irritation and pain, especially if exposed to moist skin.
INHALATION: Dust may cause respiratory irritation with cough and sore throat. Severe poisoning may cause respiratory arrest or pulmonary edema.
INGESTION: Rated slightly toxic by ingestion. May cause gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhea. Severe poisoning may cause cardiovascular and respiratory effects, pulmonary edema, coma, seizures, and liver damage.
CHRONIC EFFECTS OF OVEREXPOSURE: Choline chloride is used as a food additive and has been used as a drug in treatment of liver disease and Huntington's disease. No data is available to evaluate the potential for this material to cause adverse reproductive effects or teratogenic effects in animals or humans. Choline chloride has been shown to be mutagenic effects in some test systems.

CARCINOGENICITY: None of the components is listed as a carcinogen or suspect carcinogen by NTP, IARC or OSHA.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: There is no medical conditions known to be aggravated by exposure to this material.
TOXICOLOGY DATA: Toxicity values for this chemical are:

	LD50	LC50
Choline chloride	3400 mg/kg oral rat	No data available

SECTION 12: ECOLOGICAL INFORMATION

There is not ecotoxicity data is available at this time.

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL METHOD: Incinerate or dispose of in an approved landfill in accordance with all local, state and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated
DOT HAZARD CLASSIFICATION: Not regulated
DOT LABELS REQUIRED (49CFR172.101): Not applicable
UN NUMBER: Not applicable

SECTION 15: REGULATORY INFORMATION

OSHA HAZARD CLASSIFICATION: Irritant
EPA SARA 311 HAZARD CLASSIFICATION: Acute health
SARA TITLE 111 SECTION 313 INFORMATION: There are no chemicals present that are regulated under SARA 313.
CERCLA HAZARDOUS SUBSTANCE: Not applicable
REPORTABLE QUANTITY: Not applicable

STATE R-T-K COMPOSITION INFORMATION

COMPONENT	CAS #	WT%	PA	NJ
Choline chloride	67-48-1	97	N	N

CALIFORNIA PROPOSITION 65: This product contains no California Proposition 65 regulated chemicals.

EPA TSCA INVENTORY STATUS: All chemical components are listed on TSCA inventory

WHMIS CLASSIFICATION: Class D - Division 2 - Subdivision B (Toxic material causing other chronic effects)

This product has been classified in accordance with the hazard criteria in the CPR and the MSDS contains all the information required by the CPR.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the components of this product are listed on the Canadian Domestic Substances List (DSL).

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES: All of the components of this product are listed on the AICS inventory.

EUROPEAN INVENTORY OF COMMERCIAL CHEMICAL SUBSTANCES: All of the components of this product are listed on the EINECS inventory.

JAPAN METI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

KOREAN EXISTING CHEMICAL LIST: All of the components of this product are listed on the KECL.

PHILIPPINE INVENTORY OF CHEMICALS AND CHEMICAL SUBSTANCES: All of the components of this product are listed on the PICCS.

SECTION 16: OTHER INFORMATION

Approved By: Denese A. Deeds **Dated: 02/20/04**

Denese A. Deeds, CIH
IH&SC, Inc.

MSDS updated on 05/17/95	Revised to ANSI Standard Format
MSDS updated on 03/24/00	Revised Sections 11 and 15
MSDS updates on 02/20/04	Revised Header, 2, 3, 4, 9, 10, 11, and 15