Choline Chloride
Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

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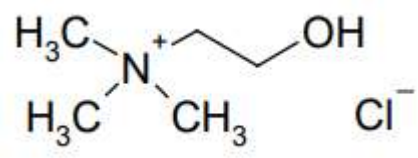
Choline Chloride
Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/ UNDERTAKING

1.1 Product Identifier

Product name	: Choline Chloride
CAS RN	: 67-48-1 (Choline Chloride)
EC#	: 200-655-4
Synonyms	: Choline Chloride, 2-Hydroxy-N,N,N-trimethylethanaminum chloride
Systematic name	: 2-Hydroxy-N,N,N-trimethylethanaminum chloride
Molecular formula	: $C_5H_{14}NOCl$
Structural formula	:



1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Choline chloride has a widespread use as a nutrient in food for human consumption

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited

FACTORY OFFICE:

Jubilant Ingrevia Limited .

(Unit-1), Plot No: -P1-L1, Within Jubilant SEZ at Plot No:5, Vilayat GIDC, Taluka-Vagra, Gujarat,392012

Tel: +91-2641-281500, 281507, Fax: +91-2641-281515

HEAD OFFICE:

Jubilant Ingrevia Limited

Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 – India

T +91-120-4361000 - F +91-120-4234881 / 84 / 85 / 87 / 95 / 96 support@jubl.com - www.jubilantingrevia.com

1.4. Emergency telephone number

For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) Call

Chemtrec: 1-800-424-9300 (US), 1-703-527-3887 (Outside U.S.)

Chemtrec (India) : 000-800-100-7141

SECTION 2: HAZARD(S) IDENTIFICATION

2.1 Classification of the substance or mixture

GHS-US classification

Not a hazardous substance.

2.2 Label Elements

GHS-US classification

Pictogram: None

Signal word: None

2.3 Hazard Statements:

- Not a hazardous substance.

2.4 Precautionary Statements:

- Not a hazardous substance.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS Number	Concentration (%)	GHS US Classification
Choline chloride	67-48-1	NLT 99%	Non-classified
Water	7732 -18-5	NMT 0.5%	Not classified

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

Inhalation: Remove to fresh air. Keep patient warm and at rest. In case of feeling unwell consult a physician.

Skin contact: Rinse with water. Wash off immediately with plenty of water removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. If symptoms persist, call a physician**.**

Ingestion: Rinse mouth with water. Do NOT induce vomiting. If vomiting occurs naturally, lean victim forward to reduce risk of aspiration. Rinse mouth. Obtain medical attention.

4.2. Most important symptoms and effects, both acute and delayed:

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 : Extinguishing media

Suitable extinguishing media: Water, Foam, CO2, Dry Chemical.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: None.

5.2 : Special hazards arising from the substance or mixture

Heating can release hazardous gases.

5.3 : Advice for firefighters

Wear self-contained breathing apparatus for fire-fighting if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 : Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing vapours, mist or gas. Wear protective clothing.
For personal protection, see section 8.

6.2 : Environmental precautions

Try to prevent the material from entering drains or watercourses.

6.3 : Methods and materials for containment and cleaning up

Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 : Reference to other sections

For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 : Precautions for safe handling

- No special precautions necessary if used correctly.
- Provide appropriate exhaust ventilation at places where dust is formed
- The product is not flammable
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Avoid generating dust and do not breathe dust.

7.2 : Storage

- Store at room temperature. Keep container tightly closed in a dry and well-ventilated place.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 : Control parameters

8.1.1 : Occupational Exposure Limits

- No data available

8.1.2 Derived No-Effect-Levels (DNEL) Predicted No-Effect-concentration (PNEC)

- No data available

8.2 : Exposure controls

8.2.1 Appropriate engineering controls

General industrial hygiene practice.

8.3 : Personal Protection

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired,use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)

8.4 : Occupational hygiene

- Take heed of usual occupational hygiene measures when handling chemical substances, especially wash the skin with soap and water before breaks and at the end of work and apply fatty skin-care products after washing.
- Avoid inhalation of dust.

8.5 : Additional Information

- No data available.

8.6 : Control of environmental exposure

- Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- Information on basic physical and chemical properties.

Sr. No.	Parameter	Typical value
1.	Appearance	White crystalline solid, hygroscopic in nature.
2.	Molecular weight	139.63
3.	Odor	Slight amine odour
4.	Odor Threshold	Not applicable
5.	pH (5% aqueous dispersion)	4.0-7.0
6.	Melting point	305^0 C
7.	Boiling point	Choline chloride decomposes
8.	Flash point	No data available
9.	Evaporation rate (n-BuAc=1)	not applicable
10.	Flammability	non-flammable
11.	Upper/lower flammability or Explosive limits	non-flammable
12.	Vapor pressure	No data available
13.	Relative Density	1.1 g/cm3 at 20^0 C
14.	Solubility	Soluble in water and alcohol
15.	Partition coefficient (Octanol /water)	-3.77

Sr. No.	Parameter	Typical value
16.	Auto-ignition temperature	No data available
17.	Decomposition temperature	No data available
18.	Viscosity	not applicable (solid)
19.	Explosive property	No data available
20.	Oxidizing property	No data available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

- No data available

10.2 Chemical Stability

- Stable at normal conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

- None

10.4 Conditions to Avoid

- Heat, avoid moisture and Dust generation.

10.5 Incompatible materials

- Strong oxidising agents, Strong acids, Strong bases

10.6 Hazardous decomposition products

- Hazardous decomposition products formed under fire conditions. – Gaseous hydrogen chloride (HCl). Oxides of Carbon and Nitrogen.
- Other decomposition products - No data available
- In the event of fire: see section 5

10.7 Hazardous Polymerization

- No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 : Information on toxicological effects

Acute Toxicity:

- Acute oral toxicity- LD50 (Rat): 5,450 mg/kg (Choline chloride)
- Acute inhalation toxicity- Remarks: No data available
- Acute dermal toxicity- Remarks: No data available

Skin Corrosion/Irritation

- Non-irritant

Serious eye damage/irritation

- Non-irritant

Respiratory or skin sensitization

- Non-Sensitizing

Germ cell mutagenicity

- Non-mutagenic.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC

Reproductive toxicity

- No data on reproduction toxicity available.

Human experience

Inhalation: Slightly hazardous in case of inhalation of dust at high concentrations.
Skin contact: May cause slight irritation in case of contact with skin (irritant)
Eye contact: May cause slight irritation in case of contact with Eye (irritant)

SECTION 12: ECOLOGICAL INFORMATION

12.1 : Toxicity

- Fish LC50 (96-hr) = >100 mg/l
- D.magna EC50 (48-hr) = 349 mg/l
  Based on the values it is expected to be non toxic to fish and other aquatic organisms.

12.2 : Persistence and degradability

Choline Chloride	
Persistence and degradability	readily biodegradable

12.3 : Bio accumulative potential

Choline Chloride	
Bio accumulative potential	BCF = 3.2 Log Kow = -3.77

- Based on the Log Kow and Bioconcentration factor value it is expected to have no potential to concentrate in fatty tissue of fish and aquatic organisms

12.4 : Mobility in Soil

Choline Chloride	
Mobility in Soil	Log Koc= 0.369 (estimated). Negligible sorption. Henry's Law Constant = 1 X 10-12 atm/m3 mole at 25 degrees. It is non-volatile from aqueous bodies. Log Kow = -3.77 (estimated). No potential to bioaccumulate.

12.5 : Other adverse effects

No other adverse effects are identified.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 : Waste treatment methods

Product: Not considered a hazardous waste under Federal Hazardous Waste Regulations (40 CFR 261). Product solutions should be treated in a wastewater treatment plant after securing treatment plant acceptance. Powder or absorbed solution should be landfilled after securing Environmental Regulatory Agency and landfill operations approval. Consult state and local regulations regarding proper disposal as they may be more restrictive or otherwise different from Federal regulations.

Packaging: Dispose of packaging contaminated by product in accordance with regulations

SECTION 14: TRANSPORT INFORMATION

- This substance is considered to be non-Hazardous for transport by Air/ Rail/ Road and Sea and thus not regulated by IATA/ ICAO/ US DOT/ IMO/ IMDG.

ADR/ RID/ DOT	IMDG	IATA
14.1 UN number		
Not classified as dangerous for transport.	Not classified as dangerous for transport.	Not classified as dangerous for transport.
14.2 UN proper shipping name		
Not classified as dangerous for transport.	Not classified as dangerous for transport.	Not classified as dangerous for transport.
14.3 Transport hazard class(es)		
Not classified as dangerous for transport.	Not classified as dangerous for transport.	Not classified as dangerous for transport.
14.4 Packing group		
Not classified as dangerous for transport.	Not classified as dangerous for transport.	Not classified as dangerous for transport.
14.5 Environmental hazards		
Not classified as dangerous for transport.	Not classified as dangerous for transport.	Not classified as dangerous for transport.

SECTION 15: REGULATORY INFORMATION

Classification as per CLP Regulation 1272/2008:

Not a hazardous substance.

Hazard Statements: Not a hazardous substance.

Chemical Inventory Lists: Choline Chloride	Status
TSCA:	Listed
EC Inventory	Listed
Canada(DSL/NDSL):	Listed (DSL)
China Catalog of Hazardous chemicals 2015	Not Listed
New Zealand Inventory of Chemicals (NZIoC)	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed
Inventory of Existing and New Chemical Substances (ENCS)	Listed
Japan ISHL Existing Substances List (ISHL)	Listed
China: IECSC	Listed
Existing Chemicals List (KECI)	Listed
Australian Inventory of Chemical Substances (AICS)	Listed

SECTION 16: OTHER INFORMATION

a) : Compilation information of safety data sheet

Date of Compilation	: September 24, 2015
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b) A key or legend to aberrations and acronyms used in the safety data sheet

GHS	= Globally Harmonized System.
Sa	= Savli Location
CAS RN	= Chemical Abstracts Service Registry Number
EC#	= European Community number
SCBA	= Self Contained Breathing Apparatus.
EU	= European Union
LD50	= Lethal Dose, 50%
LC50	= Lethal concentration 50%
NIOSH REL	= National Institute for Occupational Safety and Health Recommended Exposure Limit.
OSHA PEL	= Occupational Safety and Health Administration Permissible Exposure Limit.
RTECS	= Registry of Toxic Effects of Chemical Substances.
IARC	= International Agency for Research on Cancer.
TSCA	= Toxic Substances Control Act.
DSL/NDSL	= Domestic/Non-Domestic Substances List.
TLV	= Threshold Limit Value.
ACGIH	= American Conference of Governmental Industrial Hygienists.
REACH	= Registration, Evaluation .Authorization and Restriction of Chemicals.
CLP	= Classification, Labeling and Packaging.
IMDG-Code	= International Maritime Code for Dangerous Goods.
ICAO	= International Civil Aviation Organization.
IATA/DGR	= International Air Transport Association/Dangerous Goods Regulation.

c) Key Literature reference and sources for data

Biographical reference and data sources

- Globally Harmonized System of Classification and Labelling of Chemicals.
- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 830/2015

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)