SAFETY DATA SHEETS

According to the UN GHS revision 8

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

YATAI CHEMICAL CORP

1. SECTION 1: Identification

1.1. GHS Product identifier

Product name Propylamine

1.2. Other means of identification

Other names 1-Aminopropane; Propylamin; PROPANEAMINE

1.3. Recommended use of the chemical and restrictions on use

Identified uses Food additives -> Flavoring Agents
Uses advised against no data available

1.4. Supplier's details

Company Yatai Chemical Corp
Address Room 20A5, No.585, Longhua West Road, Shanghai, China
Telephone 0086-21-64563115

1.5. Emergency phone number

Emergency phone number 0086-21-64563115
Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2. SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Flammable liquids, Category 2
Corrosive to metals, Category 1
Acute toxicity - Category 4, Oral
Acute toxicity - Category 3, Dermal
Skin corrosion, Sub-category 1B
Serious eye damage, Category 1
Acute toxicity - Category 3, Inhalation
Specific target organ toxicity – single exposure, Category 3

2.2. GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger
Hazard statement(s) H225 Highly flammable liquid and vapourH290

	May be corrosive to metalsH302 Harmful if swallowedH311 Toxic in contact with skinH314 Causes severe skin burns and eye damageH331 Toxic if inhaledH335 May cause respiratory irritation
Precautionary statement(s)	
Prevention	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.P233 Keep container tightly closed.P240 Ground and bond container and receiving equipment.P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.P242 Use non-sparking tools.P243 Take action to prevent static discharges.P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...P234 Keep only in original packaging.P264 Wash ... thoroughly after handling.P270 Do not eat, drink or smoke when using this product.P260 Do not breathe dust/fume/gas/mist/vapours/spray.P261 Avoid breathing dust/fume/gas/mist/vapours/spray.P271 Use only outdoors or in a well-ventilated area.
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].P370+P378 In case of fire: Use ... to extinguish.P390 Absorb spillage to prevent material damage.P301+P317 IF SWALLOWED: Get medical help.P330 Rinse mouth.P302+P352 IF ON SKIN: Wash with plenty of water/...P316 Get emergency medical help immediately.P321 Specific treatment (see ... on this label).P361+P364 Take off immediately all contaminated clothing and wash it before reuse.P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.P363 Wash contaminated clothing before reuse.P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.P317 Get medical help.P319 Get medical help if you feel unwell.
Storage	P403+P235 Store in a well-ventilated place. Keep

	cool.P406 Store in a corrosion resistant/...container with a resistant inner liner.P405 Store locked up.P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3. Other hazards which do not result in classification

no data available

3. SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Propylamine	Propylamine	107-10-8	203-462-3	100%

4. SECTION 4: First-aid measures

4.1. Description of necessary first-aid measures

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

If inhaled

Fresh air, rest. Half-upright position. Refer immediately for medical attention.

Following skin contact

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer immediately for medical attention.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention.

4.2. Most important symptoms/effects, acute and delayed

INHALATION: Mucous membrane and respiratory tract irritation. Tracheitis, bronchitis, pneumonitis, and pulmonary edema. EYES: Severe corneal damage or complete eye destruction. SKIN: Single drop-deep necrosis. INGESTION: Corrosive to G.I. tract. (USCG, 1999)

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if

necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 mg/kg up to 200 ml of water for dilution if the patent can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Cover skin burns with dry sterile dressings after decontamination . /Organic bases/Amines and related compounds/

5. SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Use water spray, dry chemical, "alcohol resistant" foam, or carbon dioxide. Use water spray to keep fire-exposed containers cool. Solid streams of water may be ineffective and spread material.

5.2. Specific hazards arising from the chemical

Special Hazards of Combustion Products: Extreme danger, enter with great care. Thermal decomposition may produce nitrogen oxides, CO and/or CO 2 . Behavior in Fire: Keep away from heat and open flame; can react vigorously. (USCG, 1999)

5.3. Special protective actions for fire-fighters

Use powder, alcohol-resistant foam, water in large amounts, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

6. SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2. Environmental precautions

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3. Methods and materials for containment and cleaning up

Overspread/spill with/ sufficient sodium bisulfate and sprinkle /with/ water. Ethylamine

7. SECTION 7: Handling and storage

7.1. Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.
Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2. Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Fireproof. Separated from strong oxidants, strong acids and food and feedstuffs. Dry. Well closed. Store in an area without drain or sewer access.Outside or detached storage is prefered. Avoid oxidizing material, acids, and sources of halogen. Store in a cool, dry, well-ventilated location.

8. SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Component	Propylamine			
CAS No.	107-10-8			
	Limit value - Eight hours		**Limit value - Short term**	
	ppm	**mg/m3**	**ppm**	**mg/m3**
Finland			5 (1)	12 (1)
Latvia		5		
	Remarks			
Finland	(1) 15 minutes average value			

Biological limit values

no data available

8.2. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

9. SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Propylamine is a clear colorless liquid with an ammonia-like odor. Flash point -35°F. Less dense than water and soluble in water. Vapors are heavier than air. Produces toxic oxides of nitrogen during combustion. Used in chemical analysis and to make other chemicals.
Colour	Colorless liquid
Odour	Strong ammonia odor
Melting point/freezing point	-83°C(lit.)
Boiling point or initial boiling point and boiling range	48°C
Flammability	Highly flammable. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 2% by volume; Upper flammable limit: 10.4% by volume
Flash point	-30°C(lit.)
Auto-ignition temperature	604° F (USCG, 1999)
Decomposition temperature	no data available
pH	Alkaline
Kinematic viscosity	no data available
Solubility	Very soluble in ethanol, acetone; soluble in benzene, chloroform; slightly soluble in carbon tetrachloride
Partition coefficient n-octanol/water	log Kow = 0.48
Vapour pressure	4.79 psi (20 °C)
Density and/or relative density	0.719
Relative vapour density	2 (vs air)
Particle characteristics	no data available

10. SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes on burning. This produces toxic fumes including nitrogen oxides. The solution in water is a medium strong base. Reacts violently with strong acids, many compounds such as halogenated hydrocarbons, alcohols and nitroparaffins. Reacts violently with oxidants and mercury. This generates fire and explosion hazard. Attacks metals such as aluminium, copper, tin and zinc.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

FLAMMABLE LIQUID.The vapour is heavier than air and may travel along the ground; distant ignition possible.Colorless, alkaline liquid, very volatile (b. p. 48° C), moderately toxic, highly flammable. Dangerous fire hazard when exposed to heat, flame, sparks, or strong oxidizers. When heated to decomposition it emits toxic fumes of oxides of nitrogen. Incompatible with triethylaluminum, complex may explode on sublimation [Chini, P. et al., Chim. e Ind (Milan), 1962, 44, p. 1220].

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Violent reaction with oxidizers and mercury, strong acids, organic anhydrides, isocyanates, aldehydes, nitroparrafins, halogenated hydrocarbons, alcohols and many other compounds. Attacks many metals and alloys, especially copper. Aqueous solutions may attack glass.

10.6. Hazardous decomposition products

When heated to decomposition it emits toxic fumes of nitroxides.

11. SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 570 mg/kg
- Inhalation: LC50 Rat inhalation 2310 ppm/4 hr
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation may cause lung oedema, but only after initial corrosive effects on eyes and/or airways have become manifest. Exposure could cause severe swelling of the throat.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the respiratory tract and lungs. This may result in chronic inflammation and impaired functions.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

12. SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: LC50 Pimephales promelas (Fathead minnow, age 31 days, mean length 22.5 mm, mean weight 0.162 g) 308 mg/L/96 hr (95% confidence interval: 296-320 mg/L); flow through, 26.2 deg C, pH 7.73, dissolved oxygen 6.9 mg/L, hardness 48.5 mg/L CaCO3, alkalinity 49.5 mg/L CaCO3 /98% purity
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, Lake Langedam strain, age <24 hr); Conditions: freshwater, static, 20 deg C, pH 7.8-8.0, hardness 250 mg/L CaCO3, dissolved oxygen 94-99%; Concentration: 100 mg/L for 24 hr; Effect: intoxication, immobilization
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2. Persistence and degradability

AEROBIC: Propylamine was readily bio-oxidized in Warburg respirometer studies using aniline-acclimated activated sludge(1). Using a non-activated sludge inoculum, 102% of the theoretical BOD was measured over a 13 day time period(2). Propylamine was readily acclimated to and metabolized by an activated sludge(3).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for propylamine(SRC), using a log Kow of 0.48(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4. Mobility in soil

The Koc of propylamine is estimated as 43(SRC), using a log Kow of 0.48(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that propylamine is expected to have very high mobility in soil. The pKa of propylamine is 10.71(4), indicating that this compound will exist almost entirely in the cation form in the environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(5).

12.5. Other adverse effects

no data available

13. SECTION 13: Disposal considerations

13.1. Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate

water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN1277 (For reference only, please check.)

IMDG: UN1277 (For reference only, please check.)

IATA: UN1277 (For reference only, please check.)

14.2. UN Proper Shipping Name

ADR/RID: PROPYLAMINE (For reference only, please check.)

IMDG: PROPYLAMINE (For reference only, please check.)

IATA: PROPYLAMINE (For reference only, please check.)

14.3. Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)

IMDG: 3 (For reference only, please check.)

IATA: 3 (For reference only, please check.)

14.4. Packing group, if applicable

ADR/RID: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (For reference only, please check.)

14.5. Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6. Special precautions for user

no data available

14.7. Transport in bulk according to IMO instruments

no data available

15. SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Propylamine	Propylamine	107-10-8	203-462-3
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.

China Catalog of Hazardous chemicals 2015	Listed.
New Zealand Inventory of Chemicals (NZIoC)	Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

16. SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Do NOT take working clothes home.The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.

Any questions regarding this SDS, Please send your inquiry to ydcl@yataichemical.com

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Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.