



SAFETY DATA SHEETS

According to the UN GHS revision 9

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

SECTION 1: Identification

1.1 GHS Product identifier

Product name 2,2',2''-nitrilotriethanol

1.2 Other means of identification

Product number -

Other names 2,2',2''-Nitrilotriethanol; Ethanol, 2,2',2''-nitrilotris-

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai
Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Not classified.

2.2 GHS label elements, including precautionary statements

Pictogram(s) No symbol.
Signal word No signal word
Hazard statement(s) none
Precautionary statement(s)
Prevention none
Response none
Storage none
Disposal none

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2,2',2''-nitrilotriethanol	2,2',2''-nitrilotriethanol	102-71-6	203-049-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Give one or two glasses of water to drink.

4.2 Most important symptoms/effects, acute and delayed

Liquid may irritate eyes and skin. (USCG, 1999)

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

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Organic bases/amines and related compounds/

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Poisonous gases, such as NO_x, may be produced (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use water in large amounts, alcohol-resistant foam, dry powder, carbon dioxide.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Collect leaking and spilled liquid in covered containers as far as possible. Then wash away with plenty of water.

6.2 Environmental precautions

Collect leaking and spilled liquid in covered containers as far as possible. Then wash away with plenty of water.

6.3 Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Avoid breathing vapors, mist or gas. Environmental precautions: Do not let product enter drains. Methods and materials for containment and cleaning up: Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. 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

Separated from oxidants. Well closed. Dry. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

MAK: (inhalable fraction): 1 mg/m³; peak limitation category: I(1); pregnancy risk group: C

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 safety goggles.

Skin protection

Protective gloves.

Respiratory protection

Use local exhaust. Use ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid. Viscous.
Colour	Colorless to Pale-yellow.
Odour	Slight ammonical odor
Melting point/freezing point	20.5 °C.
Boiling point or initial boiling point and boiling range	336.1 °C. Atm. press.: 1 013.25 hPa. Remarks: Extrapolated.

Flammability	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	179 °C. Atm. press.:1 013.25 hPa.
Auto-ignition temperature	324 °C. Atm. press.:1 013.25 hPa.
Decomposition temperature	no data available
pH	pH = 10.5 (0.1 N aqueous solution); strong base
Kinematic viscosity	kinematic viscosity (in mm ² /s) = 830.2. Temperature:20°C.;kinematic viscosity (in mm ² /s) = 181.5. Temperature:40°C.;kinematic viscosity (in mm ² /s) = 59.1. Temperature:60.0°C.
Solubility	greater than or equal to 100 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = -2.3. Temperature:25 °C.;log Pow = 1.34. Temperature:25 °C.
Vapour pressure	0 hPa. Temperature:40 °C.
Density and/or relative density	1 113.6 kg/m ³ . Temperature:40 °C.;1 124.8 kg/m ³ . Temperature:20 °C.
Relative vapour density	5.14 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

The substance is a weak base. Reacts with oxidants. Decomposes on burning. This produces toxic and corrosive fumes including nitrogen oxides.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Fire hazard: Combustible liquid when exposed to heat or flame. TRIETHANOLAMINE is an aminoalcohol. Neutralize acids to form salts plus water in exothermic reactions. Amines may be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen is generated in combination with strong reducing agents, such as hydrides. Reacts violently with strong oxidants. [Handling Chemicals Safely 1980. p. 928].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Acids, oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (NOx).

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (male/female) - 6 400 mg/kg bw.
- Inhalation: LC0 - rat (male/female) - saturated TEA atmosphere (approximately 1.8 mg/m³).
- Dermal: LD50 - rabbit - > 2 000 mg/kg bw.

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

Evaluation: There is inadequate evidence in humans for the carcinogenicity of triethanolamine. There is inadequate evidence in experimental animals for the carcinogenicity of triethanolamine. Overall evaluation: Triethanolamine is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization.

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Pimephales promelas - 11 800 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Ceriodaphnia dubia - 609.88 mg/L - 48 h.
- Toxicity to algae: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - 512 mg/L - 72 h.
- Toxicity to microorganisms: IC50 - activated sludge of a predominantly domestic sewage - > 1 000 mg/L - 3 h. Remarks: Respiration rate.

12.2 Persistence and degradability

AEROBIC: Triethanolamine, present at 50 ppm, was biodegraded 70% ThOD (theoretical oxygen demand) in 10 days in a river die-away test using acclimated Kanawha River water as seed and sewage as inoculum(1). In a BOD test in water using a sewage inoculum, triethanolamine added at an initial concentration 2.5 ppm and run for 5, 10, 15 and 20 days exhibited 0, 0.8, 3.5 and 6.8% ThOD, respectively(2). Another BOD test in water using sewage inoculum incubated for 20 days resulted in 66% ThOD for triethanolamine(3). Using synthetic sea water and sewage inoculum, a 20 day run showed 69% ThOD for triethanolamine(3). Using effluent from a biological sanitary waste treatment plant as an inoculum, triethanolamine degradation was 5% ThOD (unadapted) and 28% ThOD (adapted) in a 5 day test(4). Triethanolamine, present at 500 ppm, added to BOD water with an activated sludge inoculum and acclimated for 15 days resulted in 22% ThOD after a 10 day test period(5).

12.3 Bioaccumulative potential

BCFs of <0.4 and <3.9 were reported using carp (*Cyprinus carpio*) which were exposed to respective concentrations of 2.5 and 25 ppm of triethanolamine over a 6-week period(1). According to a classification scheme(2), these BCFs suggest bioconcentration in aquatic organisms is low.

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of triethanolamine can be estimated to be 10(SRC). According to a classification scheme(2), this estimated Koc value suggests that triethanolamine is expected to have very high mobility in soil. The pKa of triethanolamine is 7.76(3), indicating that this compound will partially exist in cation form in the environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4).

12.5 Other adverse effects

no data available

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.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)	IMDG: Not dangerous goods. (For reference only, please check.)	IATA: Not dangerous goods. (For reference only, please check.)
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14.2 UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)	IMDG: Not dangerous goods. (For reference only, please check.)	IATA: Not dangerous goods. (For reference only, please check.)
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14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)	IMDG: Not dangerous goods. (For reference only, please check.)	IATA: Not dangerous goods. (For reference only, please check.)
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14.4 Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)	IMDG: Not dangerous goods. (For reference only, please check.)	IATA: Not dangerous goods. (For reference only, please check.)
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14.5 Environmental hazards

ADR/RID: No	IMDG: No	IATA: No
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14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

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
2,2',2''-nitrioltriethanol	2,2',2''-nitrioltriethanol	102-71-6	203-049-8
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			Not 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.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
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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/>

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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