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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Triethylamine

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	40271
Product numbers applied by the SDS	:	40059, 40271
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (dermal)	Category 3
	Acute toxicity (inhalation:vapors)	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 2 (respiratory organs)
Environmental hazards	Aquatic acute	Category 2
	Aquatic chronic	Category 3

Hazard pictograms



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor
Harmful if swallowed or if inhaled
Toxic in contact with skin
Causes severe skin burns and eye damage

May cause respiratory irritation
Causes damage to organs (central nervous system)
May cause damage to organs (respiratory organs) through prolonged or repeated exposure
Toxic to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take action to prevent static discharges. Do not breathe mist/vapors. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	:	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Rinse mouth. Do not induce vomiting. IF ON SKIN: Wash with plenty of water. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water . IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. Immediately call a POISON CENTER or doctor. Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell. Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture	:	Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Triethylamine	≥ 98	(C2H5)3N	Listed	204-469-4	121-44-8

4. First aid measures

First aid measures

First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, get medical treatment.

First-aid measures after skin contact : Wash the affected areas under running water, get medical treatment as soon as possible.

First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.

First-aid measures after ingestion : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

Most Important Symptoms/Effects

Symptoms/effects : If inhaled, causes cough, sore throat, shortness of breath, headache, dizziness, feeling of weakness, vomiting. The symptoms may appear after a delay.

5. Fire fighting measures

Suitable extinguishing media : Dry chemical, CO2, dry sand, or alcohol-resistant foam

Unsuitable extinguishing media : Water spray, Foam extinguisher

Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Fight fire from windward.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Foam extinguisher is effective for a large scale fire.

Personal protection (Emergency response) : Wear breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Environmental precautions

Environmental precautions : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Absorb spill with inert material (e.g, diatomaceous earth, sand) and flush spillage area with copious amounts of water. Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures	:	Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited. Ventilate well at working places.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas. Do not allow contact with acids or oxidizing substances.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, fluorine resin. Do not use vinyl chloride resin, acrylic resin, polystyrene etc.

8. Exposure controls / Personal protection equipment

ACGIH TWA	1 ppm
ACGIH STEL	3 ppm
Remark (ACGIH)	Skin

Appropriate engineering controls	:	Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection	:	If necessary, wear chemical cartridge respirator with an organic vapor cartage
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Liquid
Color	:	Colorless.
Odor	:	Ammonia like
pH	:	Alkalinity (Aqueous solution)
Melting point	:	-114.7 ° C
Freezing point	:	No data available
Boiling point	:	89.6 ° C
Flash point	:	-6.7 ° C
Auto-ignition temperature	:	230 ° C
Decomposition temperature	:	No data available
Flammability	:	Flammable
Vapor pressure	:	72 hPa (20℃)
Relative density	:	No data available

Density	:	0.725 - 0.730 g/cm³ (20℃)
Relative gas density	:	3.5
Solubility	:	Water: Miscible with water below at 18.7℃, but slightly soluble in water more than the temperature. Organic solvents: Readily soluble in acetone, benzene, chloroform, soluble in ethanol, diethyl ether.
Partition coefficient n-octanol/water (log Pow)	:	1.45
Explosive limits (vol %)	:	1.8 - 8 vol %
Viscosity, kinematic	:	0.52 mm²/s (25℃)
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	The aqueous solution is strongly alkaline and reacts violently with acids. It is corrosive to aluminum, copper, and their alloys in the presence of moisture.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Acids, oxidizing substances.
Hazardous decomposition products	:	Carbon monoxide, nitrogen oxides.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed rat LD50=460mg/kg
Acute toxicity (dermal)	:	Toxic in contact with skin rabbit LD50=415mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Harmful if inhaled (vapor) rat LC50=2600ppm/4h Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes severe skin burns In a skin irritation test using rabbits under occlusive application for 3 minutes, 1 hour or 4 hours, it was found to be corrosive. Therefore, this substance was classified into category 1B.
Serious eye damage/irritation	:	Causes serious eye damage In an eye irritation test using rabbits with application of 0.1 mL of this substance, it was found to be corrosive. Therefore, this substance was classified into category 1.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	No classification A skin sensitization test using guinea pigs was negative, and in a human patch test, no skin sensitization was observed. Therefore, this substance was not classified.
Germ cell mutagenicity	:	Classification not possible As for in vivo, a micronucleus test using mouse peripheral blood was equivocal in males and negative in females. As for in vitro, a bacterial reverse mutation test and a mammalian cell sister chromatid exchange assay were negative.

Carcinogenicity	:	No classification ACGIH classifies it as the group A4(not classifiable as a human carcinogen).
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	Causes damage to organs (central nervous system) May cause respiratory irritation It is reported that in humans inhalation of this substance resulted in electroencephalogram changes. As for experimental animals, it is reported that in a 4-hour single inhalation exposure study using rats or mice, irritation of the respiratory tract, breathing difficulties, excitation, tremors, convulsions and coordination disturbances were observed at doses within a guidance value range for category 2. Therefore, this substance was classified into category 1 (central nervous system) and category 3 (respiratory tract irritation).
STOT-repeated exposure	:	May cause damage to organs (respiratory organs) through prolonged or repeated exposure There is no relevant information about humans. As for experimental animals, as an example of a short term exposure at high concentrations using rats, it is reported that in an inhalation exposure study for 10 days, effects on respiratory organs (necrotic inflammation in the nasal cavity, squamous metaplasia in the trachea, perivascular edema of the lungs in death) were observed at 4,140 mg/m3, which is equivalent to category 2. Therefore, this substance was classified into category 2 (respiratory organs).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Toxic to aquatic life Pseudokirchneriella subcapitata ErC50=7.97mg/L/72h
Aquatic chronic	:	Harmful to aquatic life with long lasting effects Oryzias latipes LC50=24mg/L/96h

Persistence and degradability

Not readily biodegradable
BOD : 28%

Bioaccumulative potential

Low bioconcentration
BCF : ≤0.5 (0.5mg/L), ≤4.9 (0.05mg/L)

Mobility in soil

High mobility
Koc : 110

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	1296
Proper Shipping Name (IMDG)	:	TRIETHYLAMINE
Packing group (IMDG)	:	II
Transport hazard class(es) (IMDG)	:	3 (8)

Air transport(IATA)

UN-No. (IATA)	:	1296
Proper Shipping Name (IATA)	:	Triethylamine
Packing group (IATA)	:	II
Transport hazard class(es) (IATA)	:	3 (8)
Marine pollutant	:	Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category	:	Y
MFAG-No	:	132

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : Dictionary of Organic Compounds, The society of Synthetic Organic Chemistry, Kodansha Ltd. (1985) .
Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.