Issue date: 10/8/2003
Revision date: 12/16/2025

Safety Data Sheet

1. Chemical product and company identification

Product name	:	2,2',2''-Nitrilotriethanol

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	:	40268
Product numbers applied by the SDS	:	28211, 40268
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

Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Skin sensitization	Category 1
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)

Hazard pictograms



Signal word	:	Warning
Hazard statements	:	Causes skin irritation May cause an allergic skin reaction Causes serious eye irritation May cause respiratory irritation

Precautionary statements

Prevention	:	Avoid breathing mist/vapors. Wash hands, forearms and face thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response	:	IF ON SKIN: Wash with plenty of 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.
Call a POISON CENTER or doctor if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage : Store in a well-ventilated place. Keep container tightly closed. 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 : Mixture

Synonyms : Triethanolamine

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
2,2',2''-Nitrilotriethanol	≥ 90	C6H15NO3	Listed	203-049-8	102-71-6
2,2'-Iminodiethanol	0 - 0.9	C4H11NO2	Listed	203-868-0	111-42-2

*The concentration of 2,2'-iminodiethanol is a representative value and not a specification value.

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.

First-aid measures after skin contact : Wash the affected areas under running water.

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

First-aid measures after ingestion : Give the victim water or milk with egg white. Do not induce vomiting. Get medical attention.

Self protection of the first-aider : Rescuers should wear proper protective equipment like rubber gloves, goggles.

Most Important Symptoms/Effects

Symptoms/effects : Inhalation causes cough and sore throat.

5. Fire fighting measures

Suitable extinguishing media : Water, dry chemical powder, carbon dioxide, dry sand, alcohol resistant foam

Unsuitable extinguishing media : 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. Alcohol-resistant 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.
Prevention Measures for Secondary Accidents	:	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. Pay attention to fire. Ventilate well at working places.
Precautions for safe handling	:	Avoid formation of vapor and aerosols. Do not allow contact with acids or oxidizing substances.

Storage

Storage conditions	:	Store the bottle tightly closed in a cool, dark place because the substance is hygroscopic.
Material used in packaging/containers	:	Glass, fluorine resin, stainless steel. Do not use polycarbonate.

8. Exposure controls / Personal protection equipment

2,2',2''-Nitrilotriethanol	
ACGIH TWA	0.5 ppm
ACGIH STEL	1 ppm
Remark (ACGIH®)	Skin
2,2'-Iminodiethanol	
ACGIH TWA	1 mg/m³ (IFV)
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 - pale yellow
Odor	:	Ammonia like
pH	:	11 (as 50% aqueous solution)
Melting point	:	21.2 ° C
Freezing point	:	No data available
Boiling point	:	335 ° C
Flash point	:	179 ° C (C.C.)
Auto-ignition temperature	:	324 ° C
Decomposition temperature	:	No data available
Flammability	:	Flammable
Vapor pressure	:	1.33 Pa (20℃)
Relative density	:	1.126 (20℃)
Density	:	No data available
Relative gas density	:	5.1
Solubility	:	Organic solvents: Freely soluble in ethanol, practically insoluble in diethyl ether, benzene, petroleum ether. Water: > 1000 g/L (20℃)
Partition coefficient n-octanol/water (log Pow)	:	-1.59
Explosive limits (vol %)	:	1.3 - 8.51 vol %
Viscosity, kinematic	:	830 mm^2/s (20℃)
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	May react with acids or oxidizing substances.
Chemical stability	:	Stable under normal conditions. Tarnished by light.
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)	:	No classification ATEmix>2000 mg/kg
Acute toxicity (dermal)	:	No classification ATEmix>2000 mg/kg
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)

Skin corrosion/irritation	:	Causes skin irritation 2,2',2''-Nitrilotriethanol : There is observed skin irritation by high exposure levels or repeated exposure in the humans, it was classified into category 2. 2,2'-Iminodiethanol : In the test which is applied undiluted test substance to the skin of rabbits, skin irritation index (PII) is 2.6 (/8) and corresponded to mild irritation. it was the result of evaluating the moderate irritation. In addition, pH of the substance is 11 at 0.1N aqueous solution, there is considered that EU classification is Xi; R38, it was classified into category 2.
Serious eye damage/irritation	:	Causes serious eye irritation 2,2',2''-Nitrilotriethanol : Since there is the description that in the eye irritation tests using the rabbit, irritation was asknowledged and it was recovered completely 14 days afterward, it was classified into category 2A. 2,2'-Iminodiethanol : In the test which is applied 0.1g of undiluted test substance to the eyes of rabbits, severe irritation was observed in the cornea, iris and conjunctiva. Eye irritation index (maximum value is 110, corresponding to AOI) is 50-56, until 24 to 72 hours, in addition, there is 41-45, until 96 to 168 hours. It is considered that pH of this substance is 11 at 0.1N aqueous solution, it was classified into category 1. However, the content of 2,2'-iminodiethanol in this product is below the cutoff value.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	May cause an allergic skin reaction 2,2',2''-Nitrilotriethanol : There is the description that there are reports of allergic contact dermatitis in human. Based on the above, it was classified as category 1. 2,2'-Iminodiethanol : This substance is classified by the Japan Society for Occupational Health into group 2 of skin sensitizing substances. Based on the above, it was classified into category 1A.
Germ cell mutagenicity	:	Classification not possible 2,2',2''-Nitrilotriethanol : There was a negative result with the micronucleus test on mice red corpuscles which is a in vivo mutagenicity test using somatic cells.
Carcinogenicity	:	Classification not possible 2,2',2''-Nitrilotriethanol : IARC classifies it as group 3 (not classifiable as to its carcinogenicity to humans). 2,2'-Iminodiethanol : Based on its classification as group 2B by the IARC, it was classified as category 2. However, the content of 2,2'-iminodiethanol in this product is below the cutoff value.
Reproductive toxicity	:	Classification not possible 2,2',2''-Nitrilotriethanol : Although the transdermal route is corresponds to the out of category, there is no propagation test data by the oral route, it was not possible to classify because of insufficient data. 2,2'-Iminodiethanol : In developmental toxicity studies by oral administration in pregnancy on 6 to 19 days of the rat, at 125 or 200 mg/kg or more doses, at a dose that was seen general toxicity of the mother animal such as suppression of body weight gain, decrease of food consumption, an increase in kidney weight, as effects on the reproductive, increase of post-implantation mortality and early postnatal death are reported, therefore it was classified into category 2. However, the content of 2,2'-iminodiethanol in this product is below the cutoff value.

STOT-single exposure	:	May cause respiratory irritation 2,2',2''-Nitrilotriethanol : From description that vapor stimulates a nose as effect on the humans, it was classified into category 3(respiratory tract irritation). 2,2'-Iminodiethanol : By oral administration to rats, appeared minor failure in liver parenchymal cells at 200-1600mg/kg, large fat droplets and localized cytoplasmic degeneration in liver cells at 1600 mg/kg, the tubules cell necrosis of kidney at 400mg/kg or more, increase of urea in serum, SGOT, and LDH were observed. From above information, effects at dosage of guidance value of category 1 for the liver, and guidance value of category 2 for kidneys were repoted, it was classified into category 1(liver), category 2(kidney). In addition, in the case of deaths, by the inhalation exposure 1476 ppm for 105 minutes, lethargy, incoordination, characterized by gasps and rale, slow breathing as a characteristic findings were appeared to rats. As a characteristic findings, an increase in the lowering of the heart rate, significant respiratory distress, systolic blood pressure increase were observed. Since there is the description that the main histopathological findings was a pulmonary edema, exposure concentration was corresponds to the guidance value category 2, it was classified into category 2(respiratory organs). However, the content of 2,2'-iminodiethanol in this product is below the cutoff value.
STOT-repeated exposure	:	No classification 2,2',2''-Nitrilotriethanol : Regarding the descriptions that major toxicity was not observed in dermal, oral, or an inhalation exposure test using rats, mice, or guinea pigs with the given dose of the guidance value range of caegory 2, and it was set into out of category. 2,2'-Iminodiethanol : In a study for 3 months inhalation exposure to rats, the larynx of squamous metaplasia were observed at dosage of 0.015 mg/L/6h or more,severe inflammation was observed in pharynx and airway at dosage of 0.15 mg/L/6h or more. Since dosage is within guidance value of category 1, it was classified into category 1(respiratory tract). In addition, in 49- days drinking water administration test of 42-550 mg/kg/day to rats, normocytic anemia, destruction of renal tubular epithelial cells, extensions and various early necrotic changes in the distal tubule, which was accompanied by a glass cylinder, and various early necrotic changes, degenerative changes of the early characterized by loss of cloudy swelling and basic of liver cells were observed at dosage of 155 mg/kg/day or more. In three months drinking water administered test the 25-436 mg/kg/day in rats, based on the report that dose-dependent generation of microcytic anemia, kidney disease, renal tubular necrosis, and incidence or degree of enhancement of mineralized were observed, since effect dosage was corresponding to the guidance value of category 2, it was classified into category 2 (blood, kidney, liver). However, the content of 2,2'-iminodiethanol in this product is below the cutoff value.
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Based on the results of the additivity formula and the summation method, it was classified as "No classification".
Aquatic chronic	:	No classification Based on the results of the additivity formula and the summation method, it was classified as "No classification".

Persistence and degradability

Not readily biodegradable
BOD : 0% (as 2,2',2''-Nitrilotriethanol)

Bioaccumulative potential

Low bioconcentration
BCF : ≤0.4 (2.5mg/L), ≤3.9 (0.025mg/L) (as 2,2',2''-Nitrilotriethanol)

Mobility in soil

High mobility
Koc : 10 (as 2,2',2''-Nitrilotriethanol)

Hazardous to the ozone layer

Hazardous to the ozone layer	:	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)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

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

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

Pollutant category	:	Z

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 : NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.
Dictionary of Organic Compounds, The society of Synthetic Organic Chemistry, Kodansha Ltd. (1985) .
Solvents Handbook, T, Asahara el, Kodansha Scientific Ltd. (1976) .
Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Handbook of 17625 Chemical Products, The Chemical Daily Co. (2025) .

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.