Page

Safety Data Sheet

1. Chemical product and company identification

Product name : 2-n-Butoxyethanol

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 : +81-3-6214-1090Facsimile number : +81-3-3241-1047Mail address : BC32@kanto.co.jp

Reference No : 14123

Product numbers applied by the : 05830, 14123

SDS

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 4
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (dermal)	Category 3
	Acute toxicity	Category 2
	(inhalation:wanara)	

(inhalation:vapors)

Skin corrosion/irritation Category 2 Serious eye damage/eye Category 2A

irritation

Reproductive toxicity Category 2

Specific target organ toxicity Category 1 (blood, respiratory organs, liver,

kidney)

(single exposure)

Specific target organ toxicity Category 3 (narcosis)

(single exposure)

Specific target organ toxicity Category 1 (blood)

(repeated exposure)

Hazard pictograms



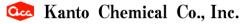


Signal word : Danger

Hazard statements : Combustible liquid

Harmful if swallowed Toxic in contact with skin Causes skin irritation Causes serious eye irritation

Fatal if inhaled



Page

May cause drowsiness or dizziness

Suspected of damaging fertility or the unborn child

Causes damage to organs (blood, respiratory organs, liver, kidney) Causes damage to organs (blood) through prolonged or repeated exposure

Precautionary statements

Response

Prevention : Do not handle until all safety precautions have been read and

understood.

Keep away from heat, hot surfaces, sparks, open flames and other

ignition sources. No smoking. 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.

Wear protective gloves/protective clothing/eye protection/face protection.

[In case of inadequate ventilation] wear respiratory protection.

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.

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.

IF exposed or concerned: Call a POISON CENTER or doctor. IF exposed or concerned: Get medical advice/attention.

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.

If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention.

Take off immediately all contaminated clothing and wash it before reuse.

Take off contaminated clothing and wash it before reuse.

: Store in a well-ventilated place.

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 : Substance

mixture

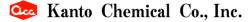
Storage

Synonyms : n-Butyl cellosolve, Ethylene glycol mono-n-butyl ether

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
2-n-Butoxyethanol	≥ 98	C6H14O2	Listed	203-905-0	111-76-2

4. First aid measures

First aid measures



Page

First-aid measures after Remove victim to fresh air and keep at rest in a position

comfortable for breathing. Immediately get medical treatment. inhalation First-aid measures after skin Wash the affected areas under running water.

contact

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

First-aid measures after The chemical is volatile. Do not induce vomiting because it ingestion increases the risk of aspiration into the lungs. Get medical attention immediately. If necessary, rinse mouth with water.

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

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 : Wear breathing apparatus.

response)

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

: Attention should be given to avoid discharge of spilled product Environmental precautions

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 : Remove nearby sources of ignition and prepare extinguishing media.

Secondary Accidents

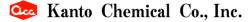
7. Handling and storage

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 oxidizing substances.

Storage

Storage conditions : Store in a dark, cool place and tightly closed.

Material used in : Glass, fluorine resin, stainless steel.

packaging/containers Do not use polyvinyl chloride resin, acrylic resin.

8. Exposure controls / Personal protection equipment

ACGIH TWA 20 ppm

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 : Aromatic

pH : No data available

Melting point : -70 $^{\circ}$ C

Freezing point : No data available

Boiling point : $170.2 \,^{\circ}$ C Flash point : $61 \,^{\circ}$ C (C.C.)

Auto-ignition temperature : 244 $^{\circ}$ C

Decomposition temperature : No data available

Flammability : Flammable
Vapor pressure : 0.8 hPa (20°C)
Relative density : No data available

Density : $0.898 - 0.905 \text{ g/cm}^3 (20^{\circ}\text{C})$

Relative gas density : 4.1

Solubility : Water: Miscible. Organic solvents: Miscible with acetone, diethyl

ether, ethanol, etc.

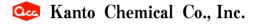
Partition coefficient n- : 0.83

octanol/water (log Pow)

Explosive limits (vol %) : 1.1 - 10.6 vol % Viscosity, kinematic : $3.52 \text{ mm}^2/\text{s}$ (25°C) Particle characteristics : No data available

10. Stability and reactivity

Reactivity : May react with oxidizing substances.



Page

Chemical stability : Stable under normal conditions.

Possibility of hazardous : Stable under normal conditions of use.

reactions

Conditions to avoid : Light, heat.

Incompatible materials : Oxidizing substances. Hazardous decomposition : Carbon monoxide.

products

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed

rat LD50=470mg/kg

Acute toxicity (dermal) : Toxic in contact with skin

rabbit LD50=220mg/kg

Acute toxicity (inhalation) No classification (gas)

> Fatal if inhaled (vapor) rat LC50=450ppm/4h

Classification not possible (dust, mist)

Skin corrosion/irritation Causes skin irritation

> There were multiple reports of skin irritation test with rabbits. It was reported that, in 2 tests equivalent to OECD TG 404, it was irritating, and that although severe and persistent erythema and severe edema were observed as the findings, they disappeared after 7 days. Based on the above results, it was classified into category

Serious eye damage/irritation Causes serious eye irritation

> There are reports that, in eye irritation test with rabbits (OECD TG 405, GLP-compliant), although 24-27 hours after administration, corneal opacity score was 0.9, iritis score was 0.6, conjunctivitis

score was 2.6, and conjunctival edema score was 1.8, they disappeared within 21 days. Based on the above result, it was

classified into category 2A.

Respiratory sensitization

Skin sensitization

Classification not possible : No classification

There is a report that it was negative in a maximization test with

guinea pigs (OECD TG 406, GLP).

Germ cell mutagenicity : No classification

> As for in vivo, it was negative in bone marrow micronucleus tests with rats and mice. As for in vitro, there were both negative and positive results in bacterial reverse mutation tests, and gene mutation tests and sister chromatid exchange tests with cultured mammalian cells, and it was negative in a chromosomal aberration

test and a micronucleus test.

Carcinogenicity No classification

IARC classifies it as group 3(not classifiable as to its

carcinogenicity to humans).

Reproductive toxicity Suspected of damaging fertility or the unborn child

> In a teratogenicity test with rats by the inhalation route, a teratogenicity test with rabbits by the inhalation route (OECD TG 414) and a teratogenicity test with rats by the oral route (OECD TG 414), developmental effects were observed at doses where maternal toxicities developed. Therefore, it was classified into category 2.

Page

STOT-single exposure

: Causes damage to organs (blood, respiratory organs, liver, kidney) May cause drowsiness or dizziness

In humans, respiratory tract irritation, vomiting, dizziness, lethargy, coma, dyspnea, mydriasis, metabolic acidosis, decreased hemoglobin and hematuria were reported by the inhalation and oral route, and hypokalemia, increased serum creatinine concentration, significantly increased urinary excretion of oxalate ester crystals, hypoxemia, pulmonary edema, adult respiratory distress syndrome and nonhemolytic hypochromic anemia with thrombocytopenia were reported by oral ingestion. In the case of dermal application, there is a report that prostration, hypothermia, hemoglobinuria, narcosis, failure of respiration, renal impairment, modified lungs (no detail description), congestion of the liver, necrotic foci with mesenchymatous reactions, inconstant steatosis, congestion of the spleen, enlarged kidney with hemoglobinemic nephrosis and cutaneous lesions including necrosis were observed at 72-225 mg/kg for rabbits. Besides, these findings were confirmed within the guidance value range of category 1. From the above, it was classified into category 1 (blood, respiratory organs, liver, kidney), category 3 (narcosis).

STOT-repeated exposure

Causes damage to organs (blood) through prolonged or repeated exposure

There was no available information on effects from repeated exposure in humans. In experimental animals, in a 13-week administration test with rats by drinking water, effects on the hemal system and decreased sperm concentrations were observed at a dose equivalent to caegory 2. By the inhalation route, in 14-week or 2-year inhalation exposure tests with rats or mice, findings of anemia were observed from the low concentration equivalent to category 1, and the effects tended to be more intense in rats than in mice, and in females rather than in males. Besides, this substance caused no obvious effects on the testis both in human and experimental animals. From the above, it was classified into

category 1 (blood).

Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute : No classification

Cyprinodon variegatus LC50=116mg/L/96h

Aquatic chronic : No classification

Persistence and degradability

Readily biodegradable

BOD: 96.0%

Bioaccumulative potential

Low bioconcentration

BCF : 3.2

Mobility in soil

High mobility Koc : 1

Page

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) : 2810

Proper Shipping Name (IMDG) : TOXIC LIQUID, ORGANIC, N.O.S.

Packing group (IMDG) : II

Transport hazard class(es) : 6.1

(IMDG)

Air transport(IATA)

UN-No. (IATA) : 2810

Proper Shipping Name (IATA) : Toxic liquid, organic, n.o.s.

Packing group (IATA) : II
Transport hazard class(es) : 6.1

(IATA)

Marine pollutant : Not applicable

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

Pollutant category : Y MFAG-No : 153

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 : Solvents Handbook, T, Asahara el, Kodansha Scientific Ltd.

(1976) .

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.