

Safety Data Sheet

1. Chemical product and company identification

Product name : ETHANOL (99.5)

Company information

Name of manufacturer : KANTO CHEMICAL CO., INC.
 Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan
 Name of section : Electronic materials division technical department
 Telephone number : +81-3-6214-1080
 Facsimile number : +81-3-3241-1043
 Mail address : el-info@kanto.co.jp
 Reference No : GE00017 1.2
 Recommended uses and restrictions : Electronic chemicals

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 2
Health hazards	Serious eye damage/eye irritation	Category 2B
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 1A
	Specific target organ toxicity (single exposure)	Category 3 (narcosis)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (liver)
	Specific target organ toxicity (repeated exposure)	Category 2 (central nervous system)

Hazard pictograms



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor
 Causes eye irritation
 May cause respiratory irritation
 May cause drowsiness or dizziness
 May cause cancer
 May damage fertility or the unborn child
 Causes damage to organs (liver) through prolonged or repeated exposure
 May cause damage to organs (central nervous system) through prolonged or repeated exposure

Precautionary statements

- 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.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Do not breathe mist / vapor.
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.
- Response : 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: Get medical advice/attention.
Call a POISON CENTER or doctor if you feel unwell.
Get medical advice/attention if you feel unwell.
If eye irritation persists: Get medical advice/attention.
- 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
Synonyms : Ethyl alcohol

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Ethanol	min. 99.5	C2H5OH	Listed	200-578-6	64-17-5

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



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

Most Important Symptoms/Effects

Symptoms/effects : Inhalation causes cough, headache, feeling of fatigue, and lethargy.

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. Fire is strictly prohibited.
Ventilate well at working places.
Prevent build-up of electrostatic charges (e.g. by grounding) .

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 STEL	1000 ppm
------------	----------

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

Protective equipment

Respiratory protection : If necessary, wear gas mask for organic solvents or airline respirator.

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 : -114.1 ° C
 Freezing point : No data available
 Boiling point : 78.5 ° C
 Flash point : 14 ° C (C.C.)
 Auto-ignition temperature : 363 ° C
 Decomposition temperature : No data available
 Flammability : Flammable
 Vapor pressure : 59 hPa (20°C)
 Relative density : No data available
 Density : 0.79 g/cm³ (20°C)
 Relative gas density : 1.59
 Solubility : Water: Miscible. Organic solvents: Miscible with many kinds of organic solvents like diethyl ether, chloroform.
 Partition coefficient n-octanol/water (log Pow) : -0.32
 Explosive limits (vol %) : 4.3 - 19.0 vol %
 Viscosity, kinematic: : 1.48 mm²/s (20°C)
 Particle characteristics : No data available

10. Stability and reactivity

Reactivity : May react with strong oxidizing substances.
 Chemical stability : Stable under normal conditions of use.
 Possibility of hazardous reactions : No dangerous reactions known under normal conditions of use.
 Conditions to avoid : Light, heat.

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

11. Toxicological information

Acute toxicity (oral) : No classification
rat LD50=6200mg/kg

Acute toxicity (dermal) : No classification
rat LDLO=20000mg/kg

Acute toxicity (inhalation) : No classification (gas)
No classification (vapor)
Classification not possible (dust, mist)

Acute toxicity (vapor) - Description : rat LC50=63000ppm/4h

Skin corrosion/irritation : No classification
In a 4-hour exposure test in rabbits (OECD TG 404), mean score for erythema was 1.0 after 1 and 24 hours of exposure. Mean scores for erythema and edema were 0.0 at all other time, indicating "no irritation". Thus, it was classified as "No classification".

Serious eye damage/irritation : Causes eye irritation
In two Draize tests in rabbits (OECD TG 405), moderate irritation was observed. In one test, signs of corneal opacity, iritis, conjunctival redness, and chemosis were observed. Mean scores on Day 1 were 1 or more for corneal opacity, 2 or more for conjunctival redness, and most effects were reversible within 7 days. Thus, it was classified into category 2B.

Respiratory sensitization : Classification not possible

Skin sensitization : Classification not possible

Germ cell mutagenicity : No classification
As for in vivo tests, there are negative data on micronucleus assay in rat and mouse bone marrow, negative data on chromosome aberration tests in rat bone marrow and peripheral blood lymphocytes, and negative data on chromosome aberration tests in Chinese hamster bone marrow. In addition, negative results are obtained for micronucleus assay in mouse spermatids, chromosome aberration tests in spermatocytes, chromosome aberration tests in rat spermatogonia, and chromosome aberration tests in Chinese hamster spermatogonia. As for in vitro mutagenicity tests, there are negative data on the Ames test, and mouse lymphoma assay and micronucleus assay in cultured mammalian cells.

Carcinogenicity : May cause cancer
IARC shows that there is ample evidence for carcinogenicity of alcoholic beverages from many epidemiological data, indicating that ethanol and its main metabolite, acetaldehyde, induce malignant tumors in esophagus following ingestion of ethanol-containing-alcoholic beverages. Thus, ethanol was classified into category 1A.



- Reproductive toxicity : May damage fertility or the unborn child
Human studies have shown that prenatal ingestion of ethanol causes congenital malformation known as fetal alcohol syndrome in neonates. The malformation includes microcephaly, short palpebral fissures, abnormalities of joint, limbs and heart, and behavioral and cognitive impairment during development. As the above data are considered clear evidence of reproductive toxicity of ethanol in humans, it was classified into category 1A. As relevant information, fetal alcohol syndrome is related to female alcoholics who drink alcohol regularly in large quantities during the gestation period. There are no reports of fetal alcohol syndrome caused by industrial oral, dermal, or inhalation exposure. Animal studies have shown that malformations were observed in oral administration studies in pregnant rats.
- STOT-single exposure : May cause drowsiness or dizziness
May cause respiratory irritation
Human studies have shown that inhalation exposure causes irritative symptoms of eyes and respiratory tract. An increase in blood ethanol concentration results in mild poisoning (decreased muscular coordination, changes in feeling, character, behavior), moderate poisoning (visual impairment, sensory paralysis, delayed reaction time, speech disorder), and severe toxic symptoms (vomiting, lethargy, hypothermia, hypoglycemia, and respiratory depression). In addition, due to respiratory or circulatory failure, or in case of absent gag reflex, aspiration of gastric contents may lead to death. Thus, it was classified into category 3 (respiratory tract irritation, narcosis).
- STOT-repeated exposure : Causes damage to organs (liver) through prolonged or repeated exposure
May cause damage to organs (central nervous system) through prolonged or repeated exposure
Long-term consumption of large doses of alcohol causes toxic effects in almost all organ systems. The most affected target organ is the liver; beginning with fatty degeneration, damage can progress via necrosis and fibrotic stages to liver cirrhosis. Based on this information, it was classified into category 1 (liver). There is a report that patients with severe physical dependence caused by alcohol consumption experience craving and drug-seeking behavior and hyperreflexia with nausea, weakness, anxiety and sweating, in addition to the elicitation of a withdrawal syndrome of tremors, seizures and delirium. Based on this information, it was classified into category 2 (central nervous system).
- Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

- Aquatic acute : No classification
Daphnia magna EC50=5463mg/L/48h
- Aquatic chronic : No classification
Ceriodaphnia dubia NOEC=9.6mg/L/48h

Persistence and degradability

Readily biodegradable
BOD : 89%



Bioaccumulative potential

Low bioconcentration

log Pow : -0.32

Mobility in soil

High mobility

Koc : 0.20

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) : 1170
 Proper Shipping Name (IMDG) : ETHANOL (ETHYL ALCOHOL)
 Packing group (IMDG) : II
 Transport hazard class(es) : 3
 (IMDG)

Air transport(IATA)

UN-No. (IATA) : 1170
 Proper Shipping Name (IATA) : Ethanol
 Packing group (IATA) : II
 Transport hazard class(es) : 3
 (IATA)

Marine pollutant : Not applicable

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

Pollutant category : Z
 MFAG-No : 127

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 et al, Kodansha Scientific Ltd. (1976) .
 Handbook of dangerous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) .
 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.

