

Safety Data Sheet

1. Chemicals and Company Identification

Chemical name: Alcohol

Traceable 99 1st Grade, Traceable 99 Kosher

Supplier name: JAPAN ALCOHOL CORPORATION

Address: 6-6, Kobuna-Cho, Nihombashi, Chuo-ku, Tokyo, Japan

Department: Quality Control and Environmental Safety Office.

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Contact: <http://www.j-alco.com/inquiry/index.html>

2. Summary of Harm and Hazards

GHS Classifications (As ethanol (Ethanol Business Act))

Physical Hazards:

Flammable liquids	Category 2
Pyrophoric liquids	Not classified
Self-heating substances and mixtures	Classification not possible
Corrosive to metals	Classification not possible

Health Hazards:

Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation: vapours)	Not classified
Acute toxicity (inhalation: dusts and mists)	Classification not possible
Skin corrosion/irritation	Not classified
Serious eye damage/eye irritation	Category 2B
Respiratory sensitization/ skin sensitization	Classification not possible
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive toxicity	Category 1A
Specific target organ toxicity - single exposure	Category 3 (respiratory tract irritation, narcotic effects)
Specific target organ toxicity - repeated exposure	Category 1 (liver), Category 2 (central nervous system)
Aspiration hazard	Classification not possible

Environmental Hazards:

Hazardous to the aquatic environment (Acute)	Not classified
Hazardous to the aquatic environment (Long-term)	Not classified
Hazardous to the ozone layer	Classification not possible

Note) Hazard classes not listed other than the above are "Not applicable" due to old "Not applicable".
In addition, the above is "Not classified " due to old "Not classified ".

GHS label element

Pictograms:



Signal Word: Danger

Hazard Statement: Highly flammable liquid and vapour
Causes eye irritation
May damage fertility or the unborn child
May cause respiratory irritation
May cause drowsiness or dizziness
Causes damage to liver through prolonged or repeated exposure
May causes damage to central nervous system through prolonged or repeated exposure

Precautionary statement:

Safety measures: Read this safe data seat well, and do not handle until all safety precautions have been read and understand.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Ground the container/ Ground connected.
Use explosion - proof electrical/ ventilating/lighting equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Do not breathe gas/mist/vapours/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using the product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

First-aid measures: IF ON SKIN (or hair): Take off immediately all contaminated clothing.
Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a doctor, if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.

In case of fire: Use spray with large amounts of water or with extinguishers designed for use on alcohol fires to extinguish.

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

Disposal: Containers and their contents must be treated in accordance with the law.

3. Composition/Information on Ingredients

Substance or Mixture: Substance

Chemical name or General name: Ethanol

Synonyms : Ethyl alcohol, Etane-1-ol, Alcohol

Ingredient and range of concentration: Ethanol, not less than 99.8% alcohol by volume

Molecular mass: 46.07

CAS No. : 64-17-5

Official gazette reference No.

- Under the Law concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances: (2)-202
- Under the Law concerning Industrial Safety and Health: Existence chemical

4. First-aid measures

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a doctor, if you feel unwell.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

Ingestion: Have the victim gargle thoroughly with water.

Do not induce vomiting without medical advice.

Seek immediate medical attention.

Most important acute and delayed signs and symptoms:

Inhalation: cough, headache, fatigue, and lethargy

Skin: dry skin

Eyes: redness, pain, and burning sensation

Ingestion: burning sensation, headache, confusion, vertigo, and unconsciousness

5. Fire Fighting Measures

Appropriate extinguishing media:

Water, dry chemical, alcohol-resistant foam and carbon dioxide

The extinguishing media which you must not use:

Stick flooding

Peculiar fire fighting ways:

In the initial stage of fire, extinguish the fire with large amount of water spray, or with fire

extinguishers using dry chemical, carbon dioxide, etc. In case of big fire, interrupt from the air by foam (alcohol-resistant foam).

6. Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Measures:

Let only authorized people enter.

For avoiding physical contact with high concentration of material, put on appropriate protection such as protective glasses, gas mask and face mask.

Environmental Precautions:

Prevent this product from being released into the river that may affect on the environment.

When this product is diluted with a large amount of water, prevent contaminated wastes from being released into the environment without appropriate treatment.

Measures and Equipment for Containment and Cleaning:

In case of small amount, wash away the leaky area immediately with plenty of water.

In case of large amount, collect leaking and spilling liquid in empty sealable containers as much as possible. Wash away remainder with plenty of water.

Preventive Measures against Secondary Disaster:

Immediately remove adjacent ignition sources because this has permeability and volatility.

7. Handling and Storage

Handling

Technical Measures:

Take engineering measures and wear protective equipment specified under “8. Exposure Controls/ Personal Protection.”

Local and General Ventilation:

Take engineering measures and ventilation precautions specified under “8. Exposure Controls/ Personal Protection” for good ventilation.

Safe Handling Advice: See “10. Stability and Reactivity.”

Avoid contact with or pouring into flammable or other possible fire sources. Do not vapourize or heat up it.

Don't lay, drop, impact, or drag containers.

Make the whole electrical equipment in facilities for handling and storing with explosion-proof constructions. In places where possibly causes static electricity by alcohol flowage or others, set up equipment for effectively removing it.

Always keep facilities for handling in order and do not lay flammable or oxidative materials in or near the facilities.

Avoiding contact: Flame, spark and hot things are avoided.

Storage

Safe storage Conditions:

Store in a storage facility under the Fire Service Law. Keep the place well ventilated to prevent the vapour from retention. Also the materials less than designated volume should be kept away from ignition sources and other dangerous areas, stored in dark places well ventilated, at appropriate temperature and humidity, and shielded from light.

Do not store the material mixed with hazardous materials designated as Category 1 and Category 6 under the Fire Service Law. In principle, do not store it mixed with nonhazardous materials but

in case of storing with flammable solids or flammable liquid other than hazardous materials, by way of exception, store each of them in a mass and place the masses at intervals of one meter or more each other.

Safe container and Packaging Materials:

Use containers specified under the Fire Service Law and UN legislation covering transportation.

8. Exposure Controls, Personal Protection

Occupational exposure limits: ACGIH (2009): TLV-STEL 1000 ppm

Facility measures:

It is important to use a closed system. Use explosion-proof lighting. Handling should be made in places with no ignition sources and well ventilated.

Protective equipment:

Put on rubber gloves, rubber apron and protective footwear as necessary. In places with high concentration of material, put on rubber gloves, rubber apron, protective footwear, protective glasses and gas mask.

Working clothes: Put on antistatic clothes.

9. Physical and Chemical Properties (as ethanol 100%)

Physical state : Liquid

Color : Transparent and colorless

Odor : Characteristic redolence

Melting point/freezing point : -114.5°C

Boiling point• Initial boiling point and boiling point range : 78.32°C (101.325 kPa)

Flammability : No data

Explosive range : From lower point of 3.3 vol% to upper point of 19.0 vol% (in the air)

Flash point : 13°C

Spontaneous ignition temperature : 439°C

Decomposition temperature : No data

pH : Not applicable

Dynamic viscosity : No data

Solubility : Well dissolves in water and ether.

n-Octanol/water partition coefficient : -0.30 (logPow)

Vapour pressure : 5.878 kPa (at 20°C)

Density and/or Relative density : 0.78493 g/cm³ (at 25°C)

Relative vapour density (air = 1) : 1.59

Particle characteristics : No data

Viscosity (coefficient of viscosity) : 1.0826mPa·s(at 25°C)

10. Stability and Reactivity

Reactivity : No data

Chemical stability:

Stable, not generate hazardous or harmful decomposition product in ordinary handling conditions.

Possible Hazardous Reactions:

The substance violently reacts with strong oxidants such as nitric acid, silver nitrate, mercury nitrate, and magnesium perchlorate, causing fire and explosion hazard.

The product erodes certain plastics, rubbers, and film forming agents.

Conditions to Avoid (electrostatic discharge, impact, vibration): Exposure to a high temperature

Incompatible Materials: Strong oxidants

Hazardous Decomposition Products: No data

11. Toxicological Information (as ethanol 100%)

Acute toxicity

- Oral: "Not classified"

All of the following fall under the category of "Not classified": In rats, LD50 = 6200 mg/kg, 11,500 mg/kg, 17,800 mg/kg, 13,700 mg/kg (PATTY 6th, 2012), and 15,010 mg/kg and 7000 to 11,000 mg/kg (SIDS, 2005).

- Dermal: "Not classified"

We determined "Not classified" on the basis of LDLo = 20,000 mg/kg in rabbits (SIDS, 2005)

- Inhalation (vapours): "Not classified"

In rats, LC50 = 63,000 ppmV (DFGOT vol. 12, 1999) and 66,280 ppmV (124.7 mg/L) (SIDS, 2005) fall under the category of "Not classified." Because the concentration of the test product was lower than 90% (70,223 ppmV [132.4 mg/L]) saturation vapour pressure (78,026 ppmV [147.1 mg/L]), we used ppmV as the unit of reference value.

- Inhalation (dusts and mists): "Classification not possible" owing to data deficiency

Skin corrosion/irritation: "Not classified"

We determined "Not classified" on the basis of the following: In an experiment in which rabbits were exposed to this product for 4 hours (OECD TG 404), the average erythema score 1 and 24 hours after the end of exposure were 1.0, and the average erythema and edema scores at other points of time were 0.0. Therefore, this product was evaluated as "not irritative" (SIDS, 2005).

Serious eye damage/ eye irritation: "Category 2B"

We determined "Category 2B" on the basis of the following: The product was evaluated as "moderately irritative" in the two Draize tests in rabbits (OECD TG 405) (SIDS, 2005). In one of the two tests, the rabbits showed corneal opacity, iritis, conjunctival redness, and conjunctival edema. On day 1, the average corneal opacity score was 1 or higher and that for conjunctival redness was 2 or higher. Most of the signs resolved within 7 days (ECETOC TR, 48 (2), 1998).

Respiratory sensitization /skin sensitization:

- Respiratory sensitization: "Classification not possible" owing to data deficiency
- Skin sensitization: "Classification not possible" owing to data deficiency

Germ-cell mutagenicity: "Classification not possible"

In vivo and in vitro experiments gave negative results or were negatively evaluated. We determined "Classification not possible" because owing to the revision of the classification guidance, we were unable to select "Not classified."

Carcinogenicity: "Classification not possible"

We determined "classification not possible" because of a deficiency of data on inhalation exposure to this product, as follows:

Ethanol was not listed in Recommendation of Occupational Exposure Limits (2015), issued by the Japan Society for Occupational Health. ACGIH (2009) classified ethanol as A3 (a substance that

shows carcinogenicity in animal experiments but not in humans) on the basis of data from animal experiments with oral administration of ethanol, with the proviso that its carcinogenicity in humans was unknown. NIOSH (US) (2015) classified ethanol as A4 (a substance of which the carcinogenicity in humans cannot be evaluated owing to data deficiency or other reasons) (ACGIH, 2004). Ethanol is classified as “Not classified” in the CLP principles (EU) and as “Not listed” by the EPA (US). IARC (2010) classified alcoholic beverages and ethanol in alcoholic beverages as Group 1 (a substance that shows carcinogenicity in humans), and the US National Toxicology Program (NTP) (2014) classified alcoholic beverages as “Known” (a substance that is known as a human carcinogen); both classifications were based on data on preferable regular consumption of alcoholic beverages by humans.

Toxic to reproduction: “Category 1A”

We determined “Category 1A” on the basis of the following: In humans, prenatal maternal alcohol intake is known to cause a congenital anomaly called fetal alcohol syndrome in newborns. Anomalies include microcephaly; narrow palpebral fissure; anomalies of the joints, extremities, and heart; and impairment of behavior and cognitive function during the developmental period (PATTY, 6th, 2012). Fetal alcohol syndrome is associated with alcoholic women who chronically consume large amounts of alcohol during pregnancy. There have been no reports of fetal alcohol syndrome caused by oral, transdermal, or inhaled industrial exposure to alcohol.

Specific target organ toxicity – single exposure: “Category 3 (respiratory tract irritation, narcotic effects)”

We determined “Category 3 (respiratory tract irritation, narcotic effects)” on the basis of the following reports: In humans, inhalation exposure to this product causes eye and respiratory tract irritation. Increasing blood ethanol levels cause mild intoxication (decreased muscle coordination and changes in mood, personality and behavior); moderate intoxication (visual disturbance, sensory palsy, delayed response time, and language disorder); or severe intoxication (vomiting, lethargy, low body temperature, low blood sugar, and respiratory depression) (PATTY, 6th, 2012). Laboratory animals also show central nervous system suppression (SIDS, 2005).

Specific target organ toxicity – repeated exposure: “Category 1 (liver)” and “Category 2 (central nervous system)”

We determined “Category 1 (liver)” on the basis of the following report: In humans, consumption of large amounts of alcohol adversely affects almost all organs, the liver being most severely affected. Fatty degeneration of this organ may occur first, leading to necrosis, fibrosis, and eventually cirrhosis (DFGOT vol. 12, 1999).

We determined “Category 2 (central nervous system)” on the basis of the following report: The US FDA has approved three kinds of therapeutic agents as treatments for patients with alcohol abuse and addiction (HSDB, Accessed June, 2013).

Aspiration hazard: “Classification not possible” owing to data deficiency

12. Ecological Information

Ecological toxicity

Hazardous to the aquatic environment (Acute) : “Not classified”

From 96-hour EC50 = 1000 mg/L for algae (*Chlorella vulgaris*) (SIDS, 2005), 48-hour EC50 = 5463 mg/L for crustacea (*Daphnia magna*) (ECETOC TR 91 2003), and 96-hour LC50 = 11200 ppm for fish (*Oncorhynchus mykiss*) (SIDS, 2005), acute toxicity is not reported at 100 mg/L for algae, crustacea, and fish. Therefore, it was classified as "Not classified."

Hazardous to the aquatic environment (Long-term) : "Not classified"

If chronic toxicity data are used, then it is classified as "Not classified" due to rapid degradability (a degradation rate by BOD: 89% (Biodegradation and Bioconcentration Results of Existing Chemical Substances under the Chemical Substances Control Law, 1993)), and 10-day NOEC = 9.6 mg/L for crustacea (Ceriodaphnia sp.) (SIDS, 2005).

If acute toxicity data are used for a trophic level for which chronic toxicity data are not obtained, then it is classified as "Not classified" because it corresponds to "Not classified" in acute toxicity for both algae and fish, and it is not water-insoluble (miscible, ICSC, 2000).

From the above results, it was classified as "Not classified."

Persistent•degradability

Calculated oxygen demand (ThOD): 2.10

BOD₅ 44 to 80%ThOD

COD 90 to 100%ThOD

Inhibition of bacterial nitrification: Inhibits 50% of ammonia oxidation by Nitrosomonas in 4100mg/L.

Ecology accumulative : "No data"

Mobility in the soil : "No data"

Hazardous to the ozone layer : "Classification not possible"

This substance is not listed in the Annexes to the Montreal Protocol.

13. Disposal Considerations

Information on safe and environmentally desirable disposal or recycling of chemicals, contamination container and packaging

Discard the product according to relevant legislation as well as standards in local governments.

Consign disposal to industrial waste disposal services or local public body certified by prefectural governors or the like. Waste disposal should be consigned to waste disposal services after they were fully informed of risks and hazards.

Recycle containers after cleaning or dispose them according to relevant legislation as well as standards in local governments.

When discarding used containers or pipes, etc., they shall be rinsed with water in advance.

Disposal shall be in accordance with descriptions in the column of "Precautions to be taken during handling and storing", and with other general cautions to flammable liquids.

14. Transport Information

International regulations

•UN No.: 1170

•Name of product (UN shipping name): ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

•UN Hazard Class (Class of hazard in transport): Class 3 (Flammable liquid)

•Packing group (if applicable): II

•MARPOL(applicable or not applicable): Applicable

National regulations

•Fire Service Law: Article 2, Category 4 flammable liquid, 3 A kind of spirits in Attached Table 1 (designated volume: 400 L)

•Civil Aeronautics Law: Article 194 in Regulation 3 flammable liquid (flash point: not more than 60 °C)

- Civil Aeronautics Law: Notice of establishing criteria for transportation of explosive substances by air in Attached Table 1 Substances permitted to be transported
- Port Regulations Law: Article 12 in Regulation 5 in Attached Table 2 on Notification of Hazardous Materials
- Regulations on Transport by Ocean and Storage of Dangerous Goods: Article 2, No.1 “ハ” (1) Flammable liquid
- Notice of establishing criteria for transportation of explosive substances by ocean: Article 2, No.3 Flammable liquids in Attached Table 1
- Law relating to the Prevention of Marine Pollution and Maritime Disaster: Ordinance of Law Class Z material of 3-“イ”-20 in Attached Table 1
- In addition to the above 7. Handling and Storage, mixed loading with hazardous materials designated as Category 1 and Category 6 is placed under a ban according to the Fire Service Law.
- Guideline No. for emergency first aid measures: 127 (a yellow card should be retained during transfer)

15. Regulatory Information

- Industrial Safety and Health Act : Applicable
 - Dangerous substance·Flammable substances(Enforcement Ordinance Annex Table 1-4-4-3)
 - Dangerous Articles and Harmful Substances whose Names, etc. Should be Notified (Article 57-2, Enforcement Ordinance Article 18-2, paragraphs 1 and 2, Annex Table 9-61)
 - Dangerous or Harmful Substances to Be Indicated their Names, etc. (Article 57-1, Enforcement Ordinance Article 18, paragraphs 1 and 2, Annex Table 9-61)
- Fire Service Act : Category 4 flammable liquids, alcohol(Article 2-7, Hazardous goods, Annex Table 1, Category 4)
- Ethanol Business Act : Article 2, 90 vol% or more alcohol
- Food Sanitation Act: This product is contained in No. 337, Appendix 3, “List of items used as additives that are generally served as foods” in “Labeling of food additives according to the Food Sanitation Law,” issued by the Deputy Director of Consumer Affairs Agency as of October 20, 2010.
- Ordinance on Prevention of Organic Solvent Poisoning: Not applicable
- Ordinance on Prevention of Hazards due to Specified Chemical Substances: Not applicable
- Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof: Not applicable
 - Class I Designated Chemical Substances provided in Ordinance, Attached Table 1
 - Class II Designated Chemical Substances provided in Ordinance, Attached Table 2
 - Class I Designated Chemical Substances provided in Paragraph 5, Article 2 of the Law and Class II Designated Chemical Substances provided in Paragraph 6, Article 2 of the Law
- Poisonous and Deleterious Substances Control Act (poisonous substances in Attached Table 1 and deleterious substances in Attached Table 2): Not applicable

16. Other Information

References

- 1) Japan Bioindustry Association (a juridical foundation): Alcohol Handbook, 9th Edition (1997)
- 2) The Chemical Society of Japan: Handbook of Chemicals, 4th Revised Edition, Maruzen (1993)

- 3) The Chemical Daily Co., Ltd.: 15710 Chemical Products
- 4) National Institute of Health Sciences: International Chemical Safety Cards (ICSC), Japanese Version (2000), <http://www.nihs.go.jp/ICSC/icssj-c/icss0044c.html>
- 5) Ministry of International Trade and Industry: Official Gazette (December 28, 1993)
- 6) Verschueren, K.: Handbook of Environmental Data on Organic Chemicals, 4th ed. (2001)
- 7) National Institute of Technology and Evaluation, GHS classification results by the government, http://www.safe.nite.go.jp/ghs/ghs_download.html
- 8) IARC (2010)
- 9) NTP (2014)
- 10) NIOSH (2015)
- 11) DFGOT vol. 12 (1999)
- 12) ACGIH (2009)
- 13) ACGIH (2004)
- 14) HSDB (2013)
- 15) OECD SIDS (2005)
- 16) ECETOC TR 48(2) (1998)
- 17) PATTY 6th (2012)
- 18) Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits (2015), http://joh.sanei.or.jp/pdf/J57/J57_4_07.pdf
- 19) Pamphlet from the Ministry of Health, Labour, and Welfare, "Risk Assessment to Prevent Industrial Accidents" <http://www.mhlw.go.jp/file/06-Seisakujouhou-11300000-Roudoukijunkyokuanzenseiseibu/0000099625.pdf>

This safety data sheet was prepared in conformity with JIS Z 7253:2019 and GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.0).

Because this safety data sheet was prepared on the basis of currently available materials, information, and data, the content, physical and chemical properties, and harm and hazards of this product might be revised according to new findings or tests; therefore, this safety data sheet does not provide any guarantee. These precautions are applicable to ordinary handling. Safety measures appropriate for the usage should be taken if special handling is required.

END