SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name Propan-2-ol

1.2 Other means of identification

Product number -
Other names isopropanol; iso-Propyl alcohol; iso-propanol; 2-propanol

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.
Antimicrobial Actives; Solvents; Surfactants.
Uses advised against no data available

1.4 Supplier's details

Company Shandong Jingtai Chemical Co., Ltd
Address No. 334-10, 3rd Floor, Office Building, New Materials Trading Center, Tianqiao District, Jinan City, Shandong Province, China
Telephone +86-0531-84254777

1.5 Emergency phone number

Emergency phone number +86-0531-84254777
Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 2
Eye irritation, Category 2
Specific target organ toxicity - single exposure, Category 3

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger
Hazard statement(s) H225 Highly flammable liquid and vapour
H319 Causes serious eye irritation
H336 May cause drowsiness or dizziness

Precautionary statement(s)

Prevention	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/... P264 Wash ... thoroughly after handling. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P271 Use only outdoors or in a well-ventilated area.
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P319 Get medical help if you feel unwell.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Propan-2-ol	isopropanol	67-63-0	200-661-7	99.96%-100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Rest. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Vapors cause mild irritation of eyes and upper respiratory tract; high concentrations may be anesthetic. Liquid irritates eyes and may cause injury; harmless to skin; if ingested causes drunkenness and vomiting. (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Lower alcohols (1-3 Carbons) and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

5.3 Special protective actions for fire-fighters

Use water in large amounts, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Accidental Release Measures: Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces. Isopropyl Alcohol, Reagent, ACS

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Cool. Well closed.Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Sensitive to light. Store in light-resistant containers. Keep away from heat and sources of ignition. Store in a segrated and approved area. Store away from incompatible materials. Isopropyl Alcohol, Reagent, ACS

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 200 ppm as TWA; 400 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued.MAK: 500 mg/m3, 200 ppm; peak limitation category: II(2); pregnancy risk group: C

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid.
Colour	Colorless liquid
Odour	Pleasant odor
Melting point/freezing point	-89.5 ° C.
Boiling point or initial boiling point and boiling range	82.3 ° C. Atm. press.:1 atm.
Flammability	Class IB Flammable Liquid: Fl.P. below 73° F and BP at or above 100° F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 deg F (93 deg C)
Flash point	12 ° C.
Auto-ignition temperature	399 ° C. Remarks:The pressure was not reported.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	2.038 mPa s at 25 deg C
Solubility	Miscible with water
Partition coefficient n-octanol/water	log Pow = 0.05. Temperature:25 ° C. Remarks:PH not reported.
Vapour pressure	60.2 hPa. Temperature:25 ° C. Remarks:6.02 kPa at 25° C.
Density and/or relative density	0.8.
Relative vapour density	2.1 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

2000 ppm (Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.)
Reacts with strong oxidants. Attacks some plastics and rubber.

10.2 Chemical stability

Preserve in tight containers, remove from heat.

10.3 Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat, flame or oxidizers.The vapour mixes well with air, explosive mixtures are easily formed.ISOPROPANOL reacts with air or oxygen to form dangerously unstable peroxides. Contact with 2-butanone increases the rate of peroxide formation. An explosive reaction occurs when it is heated with (aluminum isopropoxide + crotonaldehyde). Forms explosive mixtures with trinitromethane and hydrogen peroxide. Reacts with barium perchlorate to form a highly explosive compound. Ignites on contact with dioxygenyl tetrafluoroborate, chromium trioxide and potassium-tert-butoxide. Vigorous reactions occur with (hydrogen + palladium), nitroform, oleum, COCl2, aluminum triisopropoxide and oxidizing agents. Reacts explosively with phosgene in the presence of iron salts. Incompatible with acids, acid anhydrides, halogens and aluminum (NTP, 1992). Isopropanol can react with PCl3, forming toxic HCl gas. (Logsdon, John E., Richard A. Loke., "Isopropyl Alcohol." Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 1996.).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

During distillation of 2-propanol recovered from the reduction of crotonaldehyde with aluminium isopropoxide, a violent explosion occurred. This was attributed either to peroxidized diisopropyl ether (a possible by-product) or to peroxidized crotonaldehyde.

10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Dog oral 4797 mg/kg
- Inhalation: LC50 Mouse inhalation 53 mg/L 2 hr
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence for the carcinogenicity of isopropanol in humans. There is inadequate evidence for the carcinogenicity of isopropanol in experimental animals. Overall evaluation: Isopropanol is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. This may result in depression. Exposure far above the OEL could cause unconsciousness.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking.

Aspiration hazard

A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20° C; on spraying or dispersing, however, much faster.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill) length 40-50 mm; Conditions: static, 22 deg C; Concentration: >1400000 ug/L for 24-96 hr /formulation

- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 10 000 mg/L - 24 h.
- Toxicity to algae: Toxicity threshold - Scenedesmus quadricauda - 1 800 mg/L - 7 d.
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Degradation of isopropanol with municipal waste water for 5 and 20 days resulted in a theoretical oxygen demand (ThOD) of 7% and 70%, respectively(1). Degradation of 3, 7 and 10 mg/L of isopropanol with filtered sewage seed in fresh water resulted in a ThOD of 28% in 5 days and 78% in 20 days(2). In 2 other studies, the ThOD for isopropanol using domestic waste water was 66% and 74% in 5 days(1). Isopropanol was 99% degraded with acclimated activated sludge at 20 deg C (52 mg COD/g-hr rate)(3). Filtered sewage seed resulted in a ThOD of 49% and acclimated sewage seed resulted in a ThOD of 72% after 5 days(4). Degradation of isopropanol with sewage at 20 deg C for 5 days resulted in a ThOD of 58% (avg 4 results)(5). In domestic waste water, diluted with salt water, a ThOD of 13% in 5 days and 72% in 20 days was observed(1). Biodegradation of 3, 7, and 10 mg/L of isopropanol with filtered sewage seed in salt water resulted in a ThOD of 13% in 5 days and a ThOD of 72% in 20 days(2). Isopropanol, present at 100 mg/L, reached 86% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test which determined isopropanol to be ready biodegradable(6).

12.3 Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for isopropanol(SRC), using a log Kow of 0.05(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of isopropanol can be estimated to be 1.5(SRC). According to a classification scheme(2), this estimated Koc value suggests that isopropanol is expected to have very high mobility in soil.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1219 IMDG: UN1219 IATA: UN1219

14.2 UN Proper Shipping Name

ADR/RID: ISOPROPANOL (ISOPROPYL ALCOHOL)

IMDG: ISOPROPANOL (ISOPROPYL ALCOHOL)

IATA: ISOPROPANOL (ISOPROPYL ALCOHOL)

14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4 Packing group, if applicable

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Propan-2-ol	Propan-2-ol	67-63-0	200-661-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%

- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Use of alcoholic beverages enhances the harmful effect.