

2- PROPANOL

Date of Preparation: September 2003

Revision: 2

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: 2-Propanol**Chemical Formula:** (CH₃)₂CHOH**Synonyms:** Isopropyl alcohol, IPA, Dimethyl carbinol, 2-hydroxypropane, isopropanol, sec-propyl alcohol, rubbing alcohol.**General Use:** Solvent, chemical intermediate, dehydrating agent, for denaturing ethyl alcohol, and in the semi-conductor industry.**Manufacturer:** Kanto Corporation, 13424 N. Woodrush Way, Portland, OR 97203**Non-Emergency Contact:** Customer Service, Phone (503) 283-0405, FAX (503) 240-0409**For All Transportation Emergencies Call CHEMTREC at 1-800-424-9300**

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% vol
2-Propanol	67-63-0	9.0 -99.9
De-Ionized Water	7732-18-5	Balance

Occupational Exposure Limits

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
2-Propanol	400 ppm 980 mg/m ³	None established	400 ppm 980 mg/m ³	500 ppm 1225 mg/m ³	400 ppm 500 mg/m ³	500 ppm 1225 mg/m ³	2000 ppm (10% LEL)

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Highly flammable, volatile liquid. Inhalation can cause irritation of the eyes and respiratory tract, and central nervous system depression at high concentrations.

HMIS	
H	1
F	3
R	0
PPE†	
†Sec. 8	

Potential Health Effects

Primary Entry Routes: Inhalation, ingestion, skin and eye contact.**Target Organs:** Eyes, skin, respiratory system, kidneys, and central nervous system.**Acute Effects****Inhalation:** Vapor inhalation is irritating to the respiratory tract and can cause central nervous system depression at high concentrations.**Eye:** Exposure to the vapor or direct contact with the liquid causes irritation and possible corneal burns.**Skin:** Some irritation may occur after prolonged exposure.**Ingestion:** Nausea and vomiting, headache, facial flushing, dizziness, lowered blood pressure, mental depression, hallucinations and distorted perceptions, difficulty breathing, respiratory depression, stupor, unconsciousness, and coma. Kidney insufficiency including decrease or ceasing of urine output, nitrogen retention, and edema may occur. Extensive hemorrhagic tracheobronchitis, bronchopneumonia, and hemorrhagic pulmonary edema may occur.**Carcinogenicity:** IARC Class 3 carcinogen**Medical Conditions Aggravated by Long-Term Exposure:** Dermatitis or respiratory or kidney disorders.**Chronic Effects:** Drying of skin due to defatting and delayed hypersensitivity reactions.

Section 4 - First Aid Measures

Eye Contact: Gently lift eyelids and flush immediately and continuously with copious amounts of water for at least 15 minutes. Do not allow the victim to rub or keep eyes tightly shut. Consult an ophthalmologist immediately.**Skin Contact:** Rinse with flooding amounts of water, while removing contaminated clothing, for at least 15 minutes. Wash with soap and water. Seek medical attention immediately. Wash clothing before reuse.**Ingestion:** If the victim is conscious, give large amounts of water. Seek medical attention immediately. Never give anything by mouth to an unconscious or convulsing person.**Inhalation:** Remove exposed person to an uncontaminated atmosphere and support breathing. If not breathing, give artificial respiration. Seek medical attention immediately.*After first aid, seek appropriate in-plant, paramedic, or community medical support.*

Note to Physicians: Diagnostic test: acetone in urine (from oxidation of 2-propanol in the body). Vomiting may be inadvisable because of the rapid onset of central nervous system depression. Gastric lavage is preferred.

Section 5 - Fire-Fighting Measures

Flash Point: 53°F (11.7°C)

Flash Point Method: CC

Auto ignition Temperature: 750 °F (399°C)

LEL: 2.0% v/v

UEL: 12.7% v/v at 200 °F

Flammability Classification: Class 1B Flammable Liquid

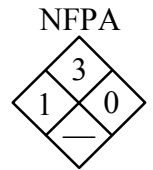
Extinguishing Media: Carbon dioxide, dry chemical, water fog, or alcohol-resistant foam.

Unusual Fire or Explosion Hazards: Containers may explode in heat of fire. Vapors may travel to an ignition source and flash back. Liquid will float on water while vapors will sink to low areas creating a potential flash back hazard.

Hazardous Combustion Products: Carbon oxides and acrid smoke.

Fire-Fighting Instructions: If possible without risk, move container from fire area. Apply cooling water to container side until well after fire is out. Stay away from ends of tanks. Use monitor nozzles or unmanned hose holders; if impossible, withdraw and let fire burn. Withdraw immediately if you hear a rising sound from venting safety device or notice any tank discoloration due to fire. Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Section 6 - Accidental Release Measures

Small Spills: Shut off all ignition sources. Wear proper protective equipment. Use non-sparking tools and equipment. Take up with earth, sand, vermiculite, or other absorbent, noncombustible material and place in suitable containers.

Large Spills: Notify safety personnel and deny entry. Isolate and ventilate area and stay upwind. Shut off all ignition sources and remove any heat sources. Use non-sparking tools and equipment. Cleanup personnel should wear proper protective equipment and respiratory protection. Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for later disposal.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Always electrically ground all equipment before handling. Use non-sparking tools to open containers. Avoid contact with eyes and skin. Avoid prolonged inhalation of vapors or mists. Use only in areas with adequate ventilation.

Storage Requirements: Store in a cool, well-ventilated area with other flammables away from heat, ignition sources, and incompatibles such as strong oxidizers. Use only undamaged, DOT-approved containers. Avoid ignition sources.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance and Odor: Colorless with a slight odor and bitter taste.

Odor Threshold: 22 ppm

Vapor Pressure: 33 mm Hg

Formula Weight: 60.09 g/mol

Vapor Density (H₂O = 1, at 4°C): 2.1

Specific Gravity (H₂O=1, at 4 °C): 0.79

pH: NA

Water Solubility: Miscible

Other Solubilities: Soluble in ethyl alcohol, ethyl ether, chloroform, and benzene.

Boiling Point: 180.5°F (82.5°C)

Freezing Point: -127°F (-88.3°C)

Viscosity: 2.1 cP at 77°F (25°C)

Evaporation Rate (ether = 1): 1.5

Critical Pressure: 47atm

Section 10 - Stability and Reactivity

Stability: 2-Propanol is stable at room temperature in closed containers under normal storage and handling conditions.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities: Include acetaldehyde, chlorine, ethylene oxide, acids and isocyanates, hydrogen, palladium, nitroform, oleum, phosgene, potassium *t*-butoxide, oxygen (forms unstable peroxides), trinitromethane, barium perchlorate, tetrafluoroborate, chromium trioxide, sodium dichromate, sulfuric acid, aluminum, aluminum triisopropoxide, and strong oxidizers. Will attack some forms of plastic, rubber, and coatings.

Conditions to Avoid: Exposure to heat, ignition sources, sunlight, and incompatibilities.

Hazardous Decomposition Products: Thermal oxidative decomposition of 2-Propanol can produce carbon dioxide, carbon monoxide and acrid smoke.

Section 11- Toxicological Information

Acute Effects:

Human, oral, TC_{LO}: 223 mg/kg

Human, oral, LD_{LO}: 3570 mg/kg

Rat, oral, LD₅₀: 2735 mg/kg

Rat, inhalation, LC₅₀: 1600 ppm/8 hours

Irritation Effects:

Rabbit, eye: 100 mg - severe irritation.

Rabbit, skin: 500 mg - mild irritation

Reproductive: Fetotoxicity, developmental abnormalities, fertility decrease, and menstrual cycle changes.

Chronic Effects: Drying of skin and delayed hypersensitivity reactions.

Carcinogenic: IARC – Group 3 carcinogen

* See NIOSH, *RTECS (NT8050000)*, for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Guppies, LC₅₀: 7,0606 ppm/7 days. Fathead minnow LC₅₀: 11,830 mg/L/1 hr. BOD = 133%/5 days.

Environmental Degradation: In soil, 2-Propanol will volatilize or leach into groundwater. Biodegradation is possible by volatilizing (estimated half-life of 5.4 days) or biodegrading in water. It is not expected to bioconcentrate in fish. In the air, it reacts with photochemically produced hydroxyl radicals with a half-life of one to several days.

Section 13 - Disposal Considerations

Disposal: Microbial degradation is possible by oxidizing 2-Propanol to acetone. 2-Propanol can be settled out of water spills by salting with sodium chloride. 2-Propanol may be approved for land disposal after treatment if the concentration is under federal concentration limits. Contact your supplier or a licensed contractor for detailed recommendations.

Regulations: Follow all applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Isopropyl alcohol

Hazard Class: 3

ID No.: UN1219

Packing Group: II

Label: 3

Special Provisions (172.102):

IB2, T4, TP1

Packaging Authorizations

Exceptions: 173.150

Non-bulk Packaging: 173.202

Bulk Packaging: 173.242

Quantity Limitations

Passenger, Aircraft, or Railcar: 5L

Cargo Aircraft Only: 60L

Vessel Stowage Requirements

Vessel Stowage: B

Emergency Response Guidebook # 129

Section 15 - Regulatory Information

EPA Regulations:

RCRA Hazardous Waste Number (40 CFR 261.21): D001

RCRA Hazardous Waste Classification (40 CFR 261.21): Characteristics of Ignitibility
EPA Hazardous Waste Number: U140
CERCLA Hazardous Substance (40 CFR 302.4): Not listed
CERCLA Reportable Quantity (RQ): Not listed
SARA 311/312 Codes: Acute, Fire
SARA 313: Listed (only by the manufactures of the strong acid process)
SARA Toxic Chemical (40 CFR 372.65): Not listed
SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed
TSCA: Listed

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Listed

Section 16 - Other Information

Revision Notes: Revised Sections 2, 9, 11, 14, and 15.

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