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MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT

MSDS Name: Isopropanol

Synonyms:

Isopropanol; Dimethylcarbinol; Sec-Propyl Alcohol; Rubbing Alcohol; Petrohol; 1-Methylethanol; I-Methylethyl Alcohol; 2-Hydroxypropane; 2-Propyl Alcohol; Isopropyl Alcohol; Propan-2-01; Propol.

For emergencies in the US, call CHEMTREC: 800-424-9300

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#: 67-63-0
Chemical Name: 2-Propanol
EINECS# 200-661-7
Hazard Symbols: F
Risk Phrases: 11

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: 12°C. Warning! Flammable liquid. Hygroscopic. This substance has caused adverse reproductive and fetal effects in animals. May cause central nervous system depression. May cause kidney damage. May form explosive peroxides. May cause severe eye irritation and possible injury. Causes digestive and respiratory tract irritation. Causes mild skin irritation. Possible sensitizer. Target Organs: Kidneys, central nervous system, gastrointestinal system, cardiovascular system.

POTENTIAL HEALTH EFFECTS

Eye:

Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury.

Skin:

May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May be absorbed through the skin. May cause irritation with pain and stinging, especially if the skin is abraded.

Ingestion:

Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation. Causes upper respiratory tract irritation.

Chronic:

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Prolonged or repeated skin contact may cause defatting and dermatitis. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. May cause allergic skin reaction in some individuals.

SECTION 4 - FIRST AID MEASURES

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. DO NOT use mouth-to-mouth respiration.

Notes to Physician:

Urine acetone test may be helpful in diagnosis. Hemodialysis should be considered in severe intoxication. Treat symptomatically and supportively.

SECTION 5 - FIRE FIGHTING MEASURES

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Containers may explode in the heat of a fire. Flammable Liquid. May form explosive peroxides. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Extinguishing Media:

Water may be ineffective. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. For small fires, use carbon dioxide, dry chemical, dry sand, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

General Information:

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

SECTION 7 - HANDLING and STORAGE

Handling:

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Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Loosen closure cautiously before opening. Contents may develop pressure upon prolonged storage. Avoid contact with eyes, skin, and clothing. Do not breathe dust, vapor, mist, or gas. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep container tightly closed. Do not ingest or inhale. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Do not store in direct sunlight. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. After opening, purge container with nitrogen before re-closing. Periodically test for peroxide formation on long-term storage. Addition of water or appropriate reducing materials will lessen peroxide formation. Store protected from moisture.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:

Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood

Exposure Limits

Chemical Name: 2-Propanol
ACGIH: (400) ppm; (500) ppm STEL
NIOSH: 400 ppm TWA; 980mg/m³ TWA 2000 ppm IDLH (10 percent lower explosive limit).
OSHA - Final PELs: 400 ppm TWA; 980 mg/m³ TWA |
OSHA Vacated PELs:
2-Propanol:
400 ppm TWA; 980 mg/m³ TWA

PERSONAL PROTECTIVE EQUIPMENT

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR §1910.134 and ANSI 288.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Appearance: colorless liquid
Odor: solvent odor - alcohol-like
pH: Not available.
Vapor Pressure: 33 mm Hg @ 20°C
Vapor Density: 2.1 (air=1)

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Evaporation Rate:	2.3 (n-butyl acetate=1)
Viscosity:	2.27 mPas @ 20°C
Boiling Point:	82°C @ 760 mmHg
Freezing/Melting Point:	-88°C
Autoignition Temperature:	459°C (858.20°F)
Flash Point:	12°C (53.60°F)
NFPA Rating:	(est.) Health: 1; Flammability: 3; Reactivity: 0
Explosion Limits, Lower:	2.5 vol %
Upper:	12.1 vol %
Decomposition Temperature:	Not available.
Solubility:	Miscible.
Specific Gravity/Density:	0.7850 (water=1)
Molecular Formula:	C3H8O
Molecular Weight:	60.0554

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability:

Stable at room temperature in closed containers under normal storage and handling conditions. Distillation may lead to the formation of peroxides. This material may be sensitive to peroxide formation.

Conditions to Avoid:

Incompatible materials, light, ignition sources, acids, excess heat, exposure to moist air or water, oxidizers.

Incompatibilities with Other Materials:

Acids, amines, ethylene oxide, halogens, permanganates, sulfuric acid, oxygen, isocyanates, hydrogen peroxides, acetaldehyde, halogenated organics (e.g. dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), ketones (e.g. acetone, acetophenone, MEK, MIBK), acid anhydrides, oleum, chromium trioxide, alkalies, chlorine, carbonyl dichloride(phosgene), iron salts, perchloric acid, potassium-tert-butoxide, moisture, Attacks some forms of plastics, rubbers, and coatings., aluminum isopropoxide + crotonaldehyde + heat, trinitromethane, barium perchlorate, dioxygenyl tetrafluoroborate, sodium dichromate + sulfuric acid, hydrogen + palladium, urea formaldehyde, aldehydes, hexamethylene diisocyanate, hypochlorous acid, aluminum at high temperatures.

Hazardous Decomposition Products:

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization:

Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 67-63-0: NT8050000

LD50/LC50:

CAS# 67-63-0: Oral, mouse: LD50 = 3600 mg/kg; Oral, rabbit: LD50 = 6410 mg/kg; Oral, rat: LD50 = 5045 mg/kg; Skin, rabbit: LD50 = 12800 mg/kg.

Carcinogenicity:

2-Propanol -
IARC: Group 3 carcinogen

Epidemiology:

Experimental teratogenic and reproductive effects have been reported for isopropanol. Early epidemiological studies have suggested an association between the strong acid manufacture of isopropyl alcohol and paranasal sinus cancer in workers.

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Teratogenicity:

Oral, rat: TDLo = 8 gm/kg (female 6-15 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity.; Oral, rat: TDLo = 32400 ug/kg (female 26 week(s) pre-mating) Effects on Embryo or Fetus - fetal death.; Inhalation, rat: TLo = 7000 ppm/7H (female 1-19 day(s) after conception) Specific Developmental Abnormalities - musculoskeletal system.

Reproductive Effects:

Oral, rat: TDLo = 11340 mg/kg (female 45 day(s) pre-mating) Maternal Effects - menstrual cycle changes or disorders; Oral, rat: TDLo = 5040 mg/kg (female 1-20 day(s) after conception) Fertility - litter size (e.g. # fetuses per litter; measured before birth).

Neurotoxicity:

No information available.

Mutagenicity:

Cytogenetic analysis: Inhalation, rat = 1030 ug/m³/16W (Intermittent).

Other Studies:

Standard Draize Test: Administration onto the skin (rabbit) = 500 mg (Mild). Standard Draize Test: Administration into the eye (rabbit) = 100 mg (Moderate). Standard Draize test: Administration into the eye (rabbit) = 100 mg/24H (Moderate).

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Goldfish: > 5000 mg/L; 24 Hr; Modified ASTM D 1345 bioassay Fish: Fathead Minnow: 11,830 mg/L; 1 Hr; Static bioassay Fish: Fathead Minnow: LC50 = 94900-10400 mg/L; 96 Hr.; Flow-through Conditions Fish: Fathead Minnow: LC50 = 61200-65500 mg/L; 96 Hr.; Flow-through Conditions Other Dangerous to aquatic life in high concentrations.

SECTION 13 - DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR. Additionally, waste generators must consult state and local hazardous waste regulation to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

SECTION 14 - TRANSPORT INFORMATION

US DOT

Shipping Name: ISOPROPANOL
Hazard Class: 3
UN Number: UN1219
Packing Group: II

Canadian TDG

Shipping Name: ISOPROPANOL
Hazard Class: 3
UN Number: UN1219

Other Information: FLASHPOINT 12 C

SECTION 15 - REGULATORY INFORMATION

US FEDERAL
TSCA

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CAS# 67-63-0 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 67-63-0: Effective Date: December 15, 1986; Sunset Date: December 15, 1996

Chemical Test Rules

CAS# 67-63-0: Testing required by: manufacturers; importers; processor.

Section 12b

CAS# 67-63-014112b

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

None of the chemicals in this material have an RQ.

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 67-63-0: acute, chronic, flammable.

Section 313

This material contains 2-Propanol (CAS# 67-63-0, 99.5%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

2-Propanol can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations:

European Labeling in Accordance with EC Directives

Hazard Symbols: F

Risk Phrases: R 11 Highly flammable.

Safety Phrases:

S 7 Keep container tightly closed.

S 9 Keep container in a well-ventilated place.

S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

WGK (Water Danger/Protection)

CAS# 67-63-011

United Kingdom Occupational Exposure Limits

CAS# 67-63-0: OES-United Kingdom, TWA 400 ppm TWA; 999 mg/m³ TWA

CAS# 67-63-0: OES-United Kingdom, STEL 500 ppm STEL; 1250 mg/m³ STEL

Canada

CAS# 67-63-0 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of B2, D2A, D2B.

CAS# 67-63-0 is not listed on Canada's Ingredient Disclosure List.

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Exposure Limits

CAS# 67-63-0: OEL-AUSTRALIA:TWA 400 ppbn (980 mg/m3);STEL 500 ppbn (1225 mg/m3)
OEL-BELGIUM:TWA 400 ppbn (985 mg/m3);STEL 500 ppbn (1230 mg/m3)
OEL-DENMARK:TWA 200 ppbn (490 mg/m3);Skin
OEL-FRANCE:STEL 400 ppbn (980 mg/m3)
OEL-GERMANY:TWA 400 ppbn (980 mg/m3)
OEL-JAPAN:STEL 400 ppbn (980 mg/m3)
OEL-THE NETHERLANDS:TWA 400 ppbn (980 mg/m3);Skin
OEL-THE PHILIPPINES:TWA 400 ppbn (980 mg/m3)
OEL-RUSSIA:STEL 400 ppbn (10 mg/m3)
OEL-SWEDEN:TWA 150 ppbn (350 mg/m3);STEL 250 ppbn (600 mg/m3)
OEL-SWITZERLAND:TWA 400 ppbn (980 mg/m3);STEL 800 ppbn
OEL-TURKEY:TWA 200 ppbn (500 mg/m3)
OEL-UNITED KINGDOM:TWA 400 ppbn (980 mg/m3);STEL 500 ppbn;Skin
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

SECTION 16 - ADDITIONAL INFORMATION

ALWAYS COMPLY **WITH** ALL APPLICABLE INTERNATIONAL, FEDERAL, STATE AND LOCAL REGULATIONS REGARDING THE TRANSPORTATION, STORAGE, USE AND DISPOSAL OF **THIS** CHEMICAL.

Due to the changing nature of regulatory requirements, the information in this document should NOT be considered all-inclusive or authoritative. Users should make their own investigations to determine the suitability of the information for their particular purposes. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

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