

MATERIAL SAFETY DATA SHEET

REAGENT GRADE ALCOHOL

RICHARD-ALLAN SCIENTIFIC

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24 hours Everyday

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1. SUBSTANCE IDENTIFICATION

SUBSTANCE: **REAGENT GRADE ALCOHOL**

CATALOG NUMBER: 7500,C4305, 9111,9900-1

TRADE NAMES/SYNONYMS: Denatured Alcohol; Reagent Grade Alcohol, Reagent Alcohol, Denatured SDA-3A Alcohol

CHEMICAL FAMILY: Hydroxyl, Aliphatic

2. COMPOSITION AND INGREDIENTS INFORMATION

Ethyl Alcohol	CAS 64-17-5	90%
Methyl Alcohol	CAS 67-56-1	5%
Isopropyl Alcohol	CAS 67-63-0	5%

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4):	Health=1	Fire=3	Reactivity=0
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Reagent Alcohol Denatured is a colorless liquid with a characteristic sweetish alcohol odor. It is a flammable liquid with an irritating vapor. It is poisonous by ingestion due to denaturant. Vapor is harmful and may be fatal or cause blindness if swallowed. It cannot be made non-poisonous. Affects central nervous system. Causes irritation to eyes, skin and respiratory tract. Reagent Alcohol Denatured is a probable human carcinogen (IARC) with experimental and teratogenic data.

Primary Routes of Exposure: Inhalation, Ingestion, skin and eye contact.

Acute Effects: Irritation of mucus membranes, eyes, nose, throat and membranes of the upper respiratory tract. Central nervous system depression resembling intoxication by ethyl alcohol. Impaired motor coordination, slurred speech, and sensory disturbances such as blurred and double vision, drowsiness, loss of appetite and an inability to concentrate follow excitation. Irritation to skin results in cracking and flaking due to defatting action of the alcohol. Splashes may cause temporary pain and blurred vision. High exposure can cause gastritis, blindness and death.

Chronic Effects: Irritation of the eyes, nose, throat and mucus membranes of the upper respiratory tract. Central nervous system effects such as dizziness and sleepiness can occur, as can dryness, irritation and

inflammation of the skin. The denaturants in this formulation may cause chronic kidney, liver, nervous system and blood cell damage. Continued ingestion of small amounts may result in blindness. Chronic exposure may cause cancer or a change in female fertility index.

Potential Health Effects:

- *Inhalation may cause irritation of mucous membranes and respiratory tract.*
- *Eye contact may cause eye irritation.*
- *Skin contact may cause irritation, rashes or burning sensation.*
- *Ingestion may cause gastritis, intoxication, blindness, and in acute cases, death.*

4. FIRST-AID PROCEDURES

Inhalation: Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. If breathing is difficult give oxygen. Get medical attention immediately.

Eye Contact: Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids for at least 15-20 minutes. If irritation develops or persists, seek medical attention.

Skin Contact: Remove contaminated clothing and shoes immediately. Wash effected area with soap or mild detergent and large amounts of water. If irritation persists, seek medical attention.

Ingestion: ANTIDOTE: (Ingestion) Unless unconscious or convulsing, give large amounts of water or milk to induce vomiting. NOTE TO PHYSICIAN: When plasma methanol concentrations exceed 20 mg/dl and when there is evidence of acidosis or visual abnormalities, a 10% solution of ethanol in 5% dextrose administered intravenously is a safe, effective antidote.

5. FIRE FIGHTING PROCEDURES

FIRE AND EXPLOSION HAZARD:

DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASHPOINT.

FLASH POINT: 55°F (13°C) (CC)
19%
LOWER EXPLOSIVE LIMIT: 3.3%
FLAMMABILITY CLASS (OSHA): IB

UPPER EXPLOSIVE LIMIT:
AUTOIGNITION TEMP. 793°F

FIRE FIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1993 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1993 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIRE RESPONSE PROCEDURES: Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Extinguish only if flow can be stopped. Use flooding amounts of water as fog: solid streams may be ineffective. Avoid breathing vapors; keep upwind. Fire fighters should wear full protective clothing and NIOSH approved self-contained breathing apparatus with full-face piece operated in the pressure demand or other positive pressure mode. Water spray can be used to extinguish fires and cool fire-exposed containers. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Dangerous fire hazard when exposed to heat. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. POISONOUS GASES ARE PRODUCED IN THE FIRE. CONTAINERS MAY EXPLODE IN FIRE.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Shut off ignition sources. Do not touch spilled material. Stop leak if you can do it without risk. Ventilate the area of spill or leak. Use water spray to reduce vapors. For small spills, take up with sand or other absorbent material and place into sealed containers for disposal.

LARGE SPILLS: Shut off ignition sources. Dike far ahead of spill for disposal. Use water spray to reduce vapors. No smoking, flames, or flares in spill area! Keep unnecessary people away. Ventilate area. Wear appropriate protective equipment, isolate hazard area and deny entry. Take up spill with vermiculite, dry sand, earth or a similar material and deposit into sealed containers. For very large spills, call fire department immediately.

REPORTABLE QUANTITY (RQ): 5000 POUNDS

The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the national response center must be notified immediately at (800) 424-8882 or (202) 426-2675 in the metropolitan Washington, D. C. area (40 CFR 302.6).

7. HANDLING AND STORAGE

General Handling: Keep away from heat, sparks and flame. Keep container tightly closed and upright to prevent leakage. Use only with adequate ventilation. Prevent buildup of vapors. Extinguish all pilot lights and turn off heater, non explosion-proof electrical equipment and other sources of ignition during use and until all vapors are gone. Avoid contact with eyes. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY. STORE IN ACCORDANCE WITH 29 CFR 1910.126.

Reagent Alcohol Denatured class IB flammable liquid (NFPA). Follow maximum allowed pile heights specified in the BOCA codes or the NFPA manual. Local fire authorities should be notified for storage of this material in any quantity. Local permits are required for storage in warehouse quantities.

Store in a well-ventilated place, away from sources of ignition and direct sunlight. Store at 15°C to 30°C (59°F to 86°F). In laboratory quantities, store away from oxidizing material, mineral acids, and chloroform. In warehouse quantities, follow NFPA and BOCA guidelines for storage of flammable liquids. Store Reagent Alcohol Denatured in areas equipped with automatic sprinklers or fire extinguishing system. Containers of this material may be hazardous when empty. Since emptied containers retain product residues, assume emptied containers to have the same hazard qualities as full containers.

8. EXPOSURE CONTROL (PERSONAL PROTECTION)

VENTILATION: Provide local exhaust ventilation and/or general dilution ventilation to meet published exposure limits.

RESPIRATION: Where the potential exists for exposures over 1000 ppm, use a NIOSH approved respirator with and organic vapor cartridge/canister. A full-face piece respirator than by a half-mask respirator provides more protection, and a powered-air-purifying respirator provides even greater protection.

FOR FIRE FIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full-face piece and is operated in a

pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES: Employee must wear appropriate protective gloves to prevent contact with this substance. ACGIH recommends NITRILE rubber or VITON as good to excellent protective materials.

EYE PROTECTION: Employee must wear splash-proof or dust-resistant goggles to prevent eye contact with this substance.

EMERGENCY EYEWASH: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.

EXPOSURE LIMITS:

100% Ethyl Alcohol (Ethanol):

1000 ppm (1900 mg/m³) OSHA TWA
1000 ppm (1880 mg/m³) ACGIH TWA
1000 ppm (1900 mg/m³) NIOSH RECOMMENDED TWA
1000 ppm (1900 mg/m³) DFG MAK TWA;
2000 ppm (3760 mg/m³) DFG MAK 60 MINUTE PEAK, MOMENTARY VALUE, 3 TIMES/SHIFT

100% Methyl Alcohol (Methanol):

200 ppm (260 mg/m³) OSHA TWA (SKIN); 250 ppm (328 mg/m³) OSHA STEL
200 ppm (262 mg/m³) ACGIH TWA (SKIN); 250 ppm (328 mg/m³) ACGIH STEL
200 ppm (260 mg/m³) NIOSH RECOMMENDED TWA (SKIN);
250 ppm (325 mg/m³) NIOSH RECOMMENDED STEL
200 ppm (262 mg/m³) DFG MAK TWA (SKIN);
400 ppm (524 mg/m³) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT
MEASUREMENT METHOD: SILICA GEL TUBE; WATER; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III #2000, METHANOL).

100% Isopropyl Alcohol (Isopropanol; 2-Propanol):

400 ppm (980 mg/m³) OSHA TWA; 500 ppm (1230 mg/m³) OSHA STEL
400 ppm (983 mg/m³) ACGIH TWA; 500 ppm (1230 mg/m³) ACGIH STEL
400 ppm (983 mg/m³) NIOSH RECOMMENDED TWA;
500 ppm (1225 mg/m³) NIOSH RECOMMENDED STEL
400 ppm (983 mg/m³) DFG MAK TWA;
800 ppm (1966 mg/m³) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT
MEASUREMENT METHOD: CHARCOAL TUBE; 2-BUTANOL/CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III #1400, ALCOHOLS I).

9. PHYSICAL DATA

DESCRIPTION: Clear, colorless liquid

MELTING POINT: -172°F (-114°C)

VAPOR PRESSURE: 40 mm Hg @ 20°C

DENSITY (20°C): 0.7893g/mL

SOLVENT SOLUBILITY: Water, Ether, Chloroform

VAPOR DENSITY: 1.59

BOILING POINT: 172°F (78°C)

SPECIFIC GRAVITY: 0.8

SOLUBILITY IN WATER: soluble

MOLECULARWEIGHT: 46.07

FLASH POINT: 55°F (13°C)

10. STABILITY AND REACTIVITY INFORMATION

REACTIVITY: Stable under normal temperatures and pressures.

INCOMPATIBILITIES: ETHYL ALCOHOL (ETHANOL):

ACETIC ANHYDRIDE AND SODIUM HYDROGEN SULFATE: Possible explosion.

ACETYL CHLORIDE: Violent reaction.

ACETYL BROMIDE: Violent reaction.

ALKALI METALS: Liberates flammable hydrogen gas.

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ALUMINUM HYDROXIDE AND SILVER (I) OXIDE: Formation of explosive silver nitride.
BARIUM PERCHLORATE: Formation of explosive compound.
BROMINE PENTAFLUORIDE: Ignition and explosions are possible.
CALCIUM HYPOCHLORITE: Possible explosion.
CHLORINE TRIOXIDE: Violent reaction.
CHLORYL PERCHLORATE: Possible ignition.
CHRONIC ANHYDRIDE: Ignition.
CHROMIUM TRIOXIDE: Possible ignition.
CHROMYL CHLORIDE: Ignition.
DIOXYGEN DIFLUORIDE: Possible explosion.
DISULFURIC ACID AND NITRIC ACID: Possible ignition.
DISULFURYL DIFLUORIDE: Violent reaction.
FLUORINE NITRATE: Explosion.
HYDROGEN PEROXIDE: Formation of highly explosive shock-sensitive compound.
HYDROGEN PEROXIDE-SULFURIC ACID MIXTURE: Explosion.
IODINE HEPTAFLUORIDE: Ignition
IODINE-MERCURIC OXIDE-METHYL ALCOHOL MIXTURE: Possible explosion.
IODINE AND PHOSPHORUS: Formation of explosive ethane iodide.
MANGANESE PERCHLORATE AND 2,2-DIMETHOXY PROPANE: Possible explosion.
MERCURIC NITRATE: Formation of explosive compound.
NITRIC ACID: Violent reaction.
NITROSYL PERCHLORATE: Possible explosion.
OXIDIZERS (STRONG): Fire and explosion hazard.
PERCHLORATES: May form explosive compound when mixed.
PERCHLORIC ACID: Explosion.
PERMANGANIC ACID: Ignition or explosion.
PERMANGANATES AND SULFURIC ACID: Explosion.
PEROXYDISULFURIC ACID: Possible explosion.
PHOSPHORUS (III) OXIDE: Ignition.
PLATINUM: Ignition.
POTASSIUM: Violent reaction.
POTASSIUM DIOXIDE: Violent reaction, possible explosion.
POTASSIUM PERCHLORATE: Possible explosion.
POTASSIUM PERMANGANATE: Possible explosion.
POTASSIUM TERT-BUTOXIDE: Ignition.
RUTHENIUM (VIII) OXIDE: Formation of explosive compound.
SILVER AND NITRIC ACID: Formation of explosive compound.
SILVER NITRATE: Formation of explosive compound.
SILVER PERCHLORATE: May form explosive compound when mixed.
SODIUM-AIR: Possible explosion.
SODIUM HYDRAZIDE: May cause violent explosion on contact.
SODIUM PEROXIDE: Violent reaction.
SULFURIC ACID AND SODIUM DICHROMATE: Possible explosion.
TETRACHLOROSILANE: Violent reaction.
URANIUM HEXAFLUORIDE: Violent reaction.
URANYL PERCHLORATE: May form explosive compound when mixed.

METHYL ALCOHOL (METHANOL):

ACETYL BROMIDE: Violent reaction with formation of hydrogen bromide.
ALKYLALUMINUM SOLUTIONS: Violent reaction.
ALUMINUM: Corrodes.
BARIUM PERCHLORATE: Distillation yields highly explosive alkyl perchlorate.
BERYLLIUM HYDROXIDE: Violent reaction, even at -196°C.
BROMINE: Vigorously exothermic reaction.
CALCIUM CARBIDE: Violent reaction.
CHLORINE: Possible ignition and explosion hazard.
CHLOROFORM AND SODIUM HYDROXIDE: Explosive reaction.
CHROMIUM TRIOXIDE (CHRONIC ANHYDRIDE): Possible ignition.
CYANURIC CHLORIDE: Violent reaction.

orl-rat LD50:7060mg/kg
inh-rat LC50:20000ppm/10H
orl-hmnLDLo:1400mg/kg

Mutagenic data (RTECS); reproductive effects data (RTECS); tumorigenic data (RTECS).

100% METHYL ALCOHOL (METHANOL):

skn-rbt 500mg/24H MOD
eye-rbt 40mg MOD
orl-rat LD50:5627mg/kg
inh-rat LC50:64000ppm/4H
orl-man TDLo:3429mg/kg: EYE
orl-hmn LDLo:428mg/kg: EYE,PUL
orl-hmn LDLo:4g/kg: EYE, PUL, GIT
inh-hmn TCLo:300ppm: EYE, CNS, PUL

Mutagenic data (RTECS); reproductive effects data (RTECS).

100% ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):

skn-rbt LD50:12800mg/kg
eye-rbt 16mg
eye-rbt 10mg MOD
orl-rat LD50:5045mg/kg
inh-rat LCLo:16000ppm/4H
orl-man LDLo:5272mg/kg

12. ECOLOGICAL INFORMATION

Acute toxic effects of Reagent Alcohol Denatured may include death of animals, birds, or fish and death or low growth rate in plants. Acute effects are seen two to four days after animals or plants come into contact with a toxic chemical substance. Chronic effects may include shortened lifespan, reproductive problems, lower fertility, and changes in appearance or behavior. Chronic effects can be seen long after first exposure(s) to a toxic chemical. Reagent Alcohol Denatured has slightly acute and chronic toxic effects to aquatic life. It has caused germination and size decrease and other injury to agricultural and ornamental crops

13. DISPOSAL GUIDELINES

Reagent Alcohol Denatured is a mixture of ethyl, methyl and isopropyl alcohol.

RCRA: The unused product is a RCRA hazardous waste if discarded. The RCRA ID number is: D001 or the appropriate spent solvent code.

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262

OTHER DISPOSAL CONSIDERATIONS: The waste material should be treated and/or disposed of at site authorized to handle hazardous chemical waste. Appropriate Federal, State and Local Regulatory Authorities should be contacted before discharge, treatment or disposal of waste material. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

Proper shipping name: Ethyl alcohol solutions

Hazard class or Division: 3

Identification Numbers: UN1170

Packing Group: II

Label(s) required (if not excepted): Flammable Liquid

Special Provisions: T1

Packaging authorizations: Exceptions: None

Quantity Limitations: Non-bulk packaging: 173.202: for liquid hazardous material in packing group II
Bulk-packaging: 173.242: for liquid hazardous material
Passenger aircraft or railcar: 5 L
Cargo aircraft only: 60 L

15. REGULATORY INFORMATION

SARA TITLE III (Superfund Amendment and Reauthorization Act)

SECTION 302 AND 304: Extremely Hazardous Substance List (40 CFR 355)- Not Listed

SECTION 311: Hazard Categorization (40 CFR 370)- Acute, Chronic, and Fire

SECTION 313: Toxic Chemicals Listing (40 CFR 372.65)- Listed as a toxic chemical

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

SECTION 102(A) Hazardous Substances (40 CFR 302.4)- Listed

Reportable Quantity - 5,000 pounds.

SECTION 101(14) Reportable Quantity: 5,000 lbs

RCRA (Resource Conservation and Recovery Act.)

40 CFR 261.21 Hazardous Waste Number: D001 or appropriate Spent Solvent Number.

NJ-RTK (New Jersey- State Right To Know)

Environmental Hazardous Substance List: Listed, Substance # 0844

ATF (Alcohol Tobacco and Firearms)

Denatured Alcohol, formula 3A is regulated by the ATF and subject to certain record keeping and reporting requirements.

TSCA (Toxic Substance Control Act)

Listed

16. OTHER INFORMATION:

Reagent Alcohol Denatured as manufactured by Richard-Allan Scientific is intended for legal use in laboratories and manufacturing environments.