

Material Safety Data Sheet
Ethanol, Denatured

Section 1 - Chemical Product and Company Identification

MSDS Name:

Ethanol

Catalog Numbers:

9200-1, 9200-5, 9200-55, 9211, 9215, C4304, C4304-5

Synonyms:

Denatured alcohol; Denatured Ethanol; SDA-1; Alcohol fully denatured; Denatured spirits; Proprietary solvent general-use; Denatured Proprietary Ethanol.

Company Identification:

Richard Allan Scientific
4481 Campus Drive
Kalamazoo, MI 49008

Company Phone Number:

800-522-7270

Emergency Phone Number:

800-424-9300

CHEMTREC Phone Number, US:

(800) 424-9300

CHEMTREC Phone Number, Europe:

(202) 483-7616

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	Percent	EINECS/ ELINCS	Hazard Symbols	Risk Phrases
64-17-5	Ethyl alcohol	<92	200-578-6	F	11
67-56-1	Methyl alcohol	<4	200-659-6	F T	11 23/24/25 39/23/24/25
108-10-1	Methyl iso-butyl ketone	<1.0	203-550-1		
141-78-6	Ethyl acetate	<1.0	205-500-4	F XI	11 36 66 67
142-82-5	Heptane (n-)	<1.0	205-563-8	F N XN	11 38 50/53 65 67

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Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Clear, colorless liquid

Warning! Causes severe eye irritation. Flammable liquid and vapor. Causes respiratory tract irritation. This substance has caused adverse reproductive and fetal effects in humans. May cause central nervous system depression. May cause liver, kidney and heart damage. Causes moderate skin irritation. Flash Point: 55°F.

Target Organs: Kidneys, Heart, Central nervous system, Liver, Eyes, Optic nerve

Potential Health Effects

Eye:

Causes severe eye irritation. May cause painful sensitization to light. May cause chemical conjunctivitis and corneal damage. Inhalation, ingestion or skin absorption of methanol can cause significant disturbances in vision, including blindness.

Skin:

Causes moderate skin irritation. May cause cyanosis of the extremities. Methanol can be absorbed through the skin, producing systemic effects that include visual disturbances.

Ingestion:

May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. 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 nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation.

Chronic:

May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damage.

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:

Get medical aid. Wash clothing before reuse. Flush skin with plenty of soap and water.

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:

Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

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Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures**General Information:**

Treat symptomatically and supportively. 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. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

Autoignition Temperature:

793°F (422.78°C)

Explosion Limits:

Lower: 3.3 Upper: 19.0

Flash Point:

55°F (12.78°C)

NFPA Rating:

(estimated) Health: 2; Flammability: 3; Instability: 0

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. vermiculite, sand or earth), then place in suitable container. 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:**

Wash thoroughly after handling. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. 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. 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. Do not store near perchlorates, peroxides, chromic acid or nitric acid.

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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 adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name:	ACGIH	NIOSH	OSHA
Ethyl alcohol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m3 TWA;
Methyl alcohol	200 ppm TWA; 250 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous route	200 ppm TWA; 260 mg/m3 TWA 6000 ppm IDLH	200 ppm TWA; 260 mg/m3 TWA;
Methyl iso-butyl ketone	50 ppm TWA; 75 ppm STEL	50 ppm TWA; 205 mg/m3 TWA 500 ppm IDLH	100 ppm TWA; 410 mg/m3 TWA;
Ethyl acetate	400 ppm TWA	400 ppm TWA; 1400 mg/m3 TWA 2000 ppm IDLH	400 ppm TWA; 1400 mg/m3 TWA;
Heptane (n-)	400 ppm TWA; 500 ppm STEL	85 ppm TWA; 350 mg/m3 TWA 750 ppm IDLH 440 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	500 ppm TWA; 2000 mg/m3 TWA;

OSHA Vacated PELs

Ethyl alcohol: 1000 ppm TWA; 1900 mg/m3 TWA
Methyl alcohol: 200 ppm TWA; 260 mg/m3 TWA
Methyl iso-butyl ketone: 50 ppm TWA; 205 mg/m3 TWA
Ethyl acetate: 400 ppm TWA; 1400 mg/m3 TWA
Heptane (n-): 400 ppm TWA; 1600 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 Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

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Section 9 - Physical and Chemical Properties

Physical State: Liquid
Color: Clear, colorless
Odor: Alcohol-like
pH: No information found
Vapor Pressure: 40 mm Hg @ 20°C
Vapor Density: 1.6
Evaporation Rate: 3.6 (Butyl Acetate=1)
Viscosity: No information found
Boiling Point: 172°F
Freezing/Melting Point: <-172°F
Decomposition Temperature: No information found
Solubility in water: Soluble.
Specific Gravity/Density: 0.8
Molecular Formula: Solution
Molecular Weight: No information found

Section 10 - Stability and Reactivity

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, ignition sources, excess heat, oxidizers

Incompatibilities with Other Materials

Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane + water, acetyl chloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide

Hazardous Decomposition Products

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

Hazardous Polymerization

Has not been reported

Section 11 - Toxicological Information

RTECS:

CAS# 64-17-5: KQ6300000
CAS# 67-56-1: PC1400000
CAS# 108-10-1: SA9275000
CAS# 141-78-6: AH5425000
CAS# 142-82-5: MI7700000

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LD50/LC50:

CAS# 64-17-5:

Draize test, rabbit, eye: 500 mg Severe
Draize test, rabbit, eye: 500 mg/24H Mild
Draize test, rabbit, skin: 20 mg/24H Moderate
Inhalation, mouse: LC50 = 39 gm/m³/4H
Inhalation, rat: LC50 = 20000 ppm/10H
Oral, mouse: LD50 = 3450 mg/kg
Oral, rabbit: LD50 = 6300 mg/kg
Oral, rat: LD50 = 7060 mg/kg
Oral, rat: LD50 = 9000 mg/kg.

CAS# 67-56-1:

Draize test, rabbit, eye: 40 mg Moderate
Draize test, rabbit, eye: 100 mg/24H Moderate
Draize test, rabbit, skin: 20 mg/24H Moderate
Inhalation, rabbit: LC50 = 81000 mg/m³/14H
Inhalation, rat: LC50 = 64000 ppm/4H
Oral, mouse: LD50 = 7300 mg/kg
Oral, rabbit: LD50 = 14200 mg/kg
Oral, rat: LD50 = 5600 mg/kg
Skin, rabbit: LD50 = 15800 mg/kg.

CAS# 108-10-1:

Draize test, rabbit, eye: 40 mg Severe
Draize test, rabbit, eye: 100 µL/24H Moderate
Draize test, rabbit, skin: 500 mg/24H Mild
Inhalation, mouse: LC50 = 23300 mg/m³
Inhalation, mouse: LC50 = 23300 mg/m³
Inhalation, rat: LC50 = 100 gm/m³
Oral, mouse: LD50 = 1900 mg/kg
Oral, mouse: LD50 = 2850 mg/kg
Oral, rat: LD50 = 2080 mg/kg
Oral, rat: LD50 = 4600 mg/kg.

CAS# 141-78-6:

Inhalation, mouse: LC50 = 45 gm/m³/2H
Inhalation, rat: LC50 = 200 gm/m³
Oral, mouse: LD50 = 4100 mg/kg
Oral, rabbit: LD50 = 4935 mg/kg
Oral, rat: LD50 = 5620 mg/kg
Skin, rabbit: LD50 = >20 mL/kg.

CAS# 142-82-5:

Inhalation, rat: LC50 = 103 gm/m³/4H.

Carcinogenicity:

CAS# 64-17-5: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 67-56-1: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 108-10-1: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 141-78-6: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 142-82-5: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

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Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome". Methanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Specific developmental abnormalities include cardiovascular, musculoskeletal, and urogenital systems.

Teratogenicity:

Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.

Reproductive:

Intrauterine, Human - woman: TDLo = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).

Mutagenicity:

DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160 gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous); Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).

Neurotoxicity:

No information found

Other:

Standard Draize Test (Skin, rabbit) = 20 mg/24H (Moderate) Standard Draize Test: Administration into the eye (rabbit) = 500 mg (Severe).

Section 12 - Ecological Information**Ecotoxicity:**

Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°C

Fish: Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified)

Bacteria: Phytobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min; Microtox test

When spilled on land it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in ground water is unknown. When released into water it will volatilize and probably biodegrade. It would not be expected to adsorb to sediment or bioconcentrate in fish.

Environmental:

When released to the atmosphere it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.

Physical:

No information found

Other:

No information found

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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 Part 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P Series Wastes

None of the components are on this list.

RCRA U Series Wastes

CAS# 67-56-1: waste number U154 (Ignitable waste). CAS# 108-10-1: waste number U161 (Ignitable waste). CAS# 141-78-6: waste number U112 (Ignitable waste).

Section 14 - Transport Information

US DOT

Proper Shipping Name: ALCOHOLS,
N.O.S. (Ethanol ,
Methanol)

Hazard Class: 3

UN Number: UN1987

Packing Group: II

USA RQ: CAS# 67-56-1: 5000 lb final RQ; 2270 kg final RQ

USA RQ: CAS# 108-10-1: 5000 lb final RQ; 2270 kg final RQ

USA RQ: CAS# 141-78-6: 5000 lb final RQ; 2270 kg final RQ

Canadian TDG

ALCOHOLS,
N.O.S. (Ethanol ,
Methanol)

3

UN1987

II

Section 15 - Regulatory Information

US Federal

TSCA

CAS# 64-17-5 is listed on the TSCA Inventory.

CAS# 67-56-1 is listed on the TSCA Inventory.

CAS# 108-10-1 is listed on the TSCA Inventory.

CAS# 141-78-6 is listed on the TSCA Inventory.

CAS# 142-82-5 is listed on the TSCA Inventory.

Health and Safety Reporting List

CAS# 108-10-1: Effective 10/4/82, Sunset 10/4/92

Chemical Test Rules

CAS# 108-10-1: 40 CFR 799.5000

CAS# 141-78-6: 40 CFR 799.5000

CAS# 142-82-5: 40 CFR 799.5115

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TSCA Section 12b

CAS# 108-10-1: Section 4 (applies only to those companies that signed an Enforceable Consent Agreement)
CAS# 142-82-5: Section 4

TSCA Significant New Use Rule (SNUR)

None of the components are on this list.

CERCLA Hazardous Substances and corresponding RQs

CAS# 67-56-1: 5000 lb final RQ; 2270 kg final RQ
CAS# 108-10-1: 5000 lb final RQ; 2270 kg final RQ
CAS# 141-78-6: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the components are on this list.

SARA Hazard Categories

CAS# 64-17-5: immediate, delayed, fire.
CAS# 67-56-1: immediate, fire.
CAS# 108-10-1: immediate, delayed, fire, reactive.
CAS# 141-78-6: fire.
CAS# 142-82-5: immediate, delayed, fire.

SARA Section 313

This material contains Methyl alcohol (CAS# 67-56-1, <4%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Methyl iso-butyl ketone is not at a high enough concentration to be reportable under Section 313.

Clean Air Act - Hazardous Air Pollutants (HAPs)

CAS# 67-56-1 is listed as a hazardous air pollutant (HAP).
CAS# 108-10-1 is listed as a hazardous air pollutant (HAP).

Clean Air Act - Class 1 Ozone Depleters

None of the components are on this list.

Clean Air Act - Class 2 Ozone Depleters

None of the components are on this list.

Clean Water Act - Hazardous Substances

None of the components are on this list.

Clean Water Act - Priority Pollutants

None of the components are on this list.

Clean Water Act - Toxic Pollutants

None of the components are on this list.

OSHA - Highly Hazardous

None of the components are on this list.

OSHA - Specifically Regulated Chemicals

None of the components are on this list.

US State

State Right to Know

Ethyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

Methyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

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Methyl iso-butyl ketone can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

Ethyl acetate can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

Heptane (n-) can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

None of the components are on this list.

California No Significant Risk Level

None of the components are on this list.

None of the components are on this list.

None of the components are on this list.

None of the components are on this list.

None of the components are on this list.

European/International Regulations

European Labelling in Accordance with EC Directives:

Hazard Symbols: F XN

Risk Phrases: R 11 Highly flammable.

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 68/20/21/22 Harmful : possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.

Safety Phrases: S 7 Keep container tightly closed.

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

S 36/37 Wear suitable protective clothing and gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

No information found

United Kingdom Occupational Exposure Limits

No information found

United Kingdom Maximum Exposure Limits

No information found

Canadian DSL/NDSL

CAS# 64-17-5 is listed on Canada's DSL List.

CAS# 67-56-1 is listed on Canada's DSL List.

CAS# 108-10-1 is listed on Canada's DSL List.

CAS# 141-78-6 is listed on Canada's DSL List.

CAS# 142-82-5 is listed on Canada's DSL List.

Canadian WHMIS Classifications

This product has a WHMIS classification of B2, D2A, D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 64-17-5 is listed on the Canadian Ingredient Disclosure List.

CAS# 67-56-1 is listed on the Canadian Ingredient Disclosure List.

CAS# 108-10-1 is listed on the Canadian Ingredient Disclosure List.

CAS# 141-78-6 is listed on the Canadian Ingredient Disclosure List.

CAS# 142-82-5 is listed on the Canadian Ingredient Disclosure List.

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Section 16 - Other Information

No information found
MSDS Creation Date: December 27, 2006
Revision Date: December 27, 2006

Revisions were made in Sections:

5, 9, 14

This MSDS is intended for review and guidance in the receipt, storage, handling, use and disposal of product purchased from us, and for no other purpose. Use this product only as directed and in accordance with applicable instructions and warnings provided with the product. Please consult your institution's policies regarding use of this product. If you have obtained this MSDS other than in connection with the supply of this product from us, this MSDS should be consulted for general information only, and should not be relied upon for any purpose. As with the use of all hazardous materials, you should in all instances follow the guidance of the MSDS provided or available with the specific product purchased.