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\*\*\*\* MATERIAL SAFETY DATA SHEET \*\*\*\*

Ethanol SDA1 Anhydrous  
88067

\*\*\*\* SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION \*\*\*\*

MSDS Name: Ethanol SDA1 Anhydrous

Catalog Numbers:

A405, A405-20, A405F-1GAL, A405P-4

Synonyms:

Ethyl Alcohol, Denatured; Grain Alcohol, Denatured; Ethyl Hydroxide,

Denatured; Algarin, Denatured

Company Identification: Fisher Scientific

1 Reagent Lane

Fairlawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

\*\*\*\* SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS \*\*\*\*

CAS#	Chemical Name	%	EINECS#
64-17-5	Ethyl Alcohol	95.27	200-578-6
108-10-1	Methyl Isobutyl Ketone	1.0%	203-550-1
141-78-6	Ethyl Acetate	1.0%	205-500-4
64742-89-8	Hydrocarbon	1.0%	265-192-2

Hazard Symbols: F  
Risk Phrases: 11

\*\*\*\* SECTION 3 - HAZARDS IDENTIFICATION \*\*\*\*

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 57 deg F.  
Warning: Flammable liquid. May cause skin irritation. May cause central nervous system depression. Causes severe eye irritation. May cause liver and kidney damage. May cause reproductive and fetal effects. May cause cancer based on animal studies.  
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:

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

Skin:

May cause skin irritation. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. May be absorbed through the skin.

Ingestion:

May cause central nervous system depression, kidney damage, and liver damage. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. May cause respiratory tract irritation. Prolonged exposure may result in dizziness and general weakness.

Chronic:

Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged or repeated exposure may cause adverse reproductive effects. May cause liver and kidney damage. May cause fetal effects.

\*\*\*\* SECTION 4 - FIRST AID MEASURES \*\*\*\*

Eyes:

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

Skin:

Get medical aid if irritation develops or persists. Flush skin with plenty of soap and water.

Ingestion:

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 immediately. Induce vomiting by giving one teaspoon of Syrup of Ipecac.

Inhalation:

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

Notes to Physician:

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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 can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool.

Extinguishing Media:

Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

Autoignition Temperature: 685 deg F (Ethanol)

Flash Point: 57 deg F ( 13.89 deg C)

NFPA Rating: Not published.

Explosion Limits, Lower: 3.3 (Ethanol)

Upper: 18.0 (Ethanol)

\*\*\*\* 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.

\*\*\*\* SECTION 7 - HANDLING and STORAGE \*\*\*\*

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not ingest or inhale. 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 cool, dry place. Store in a tightly closed container.

\*\*\*\* SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION \*\*\*\*

Engineering Controls:

Use adequate ventilation to keep airborne concentrations low.

Chemical Name	Exposure Limits		
	ACGIH	NIOSH	OSHA - Final PELs
Ethyl Alcohol	1000 ppm ; 1880 mg/m3	1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH (lower explosive limit)	1000 ppm TWA; 1900 mg/m3 TWA
Methyl Isobutyl Ket one	50 ppm ; 205 mg/m3; 75 ppm STEL; 307 mg/m3	50 ppm TWA; 205 mg/m3 TWA 500 ppm IDLH	100 ppm TWA; 410 mg/m3 TWA
Ethyl Acetate	400 ppm ; 1440 mg/m3	400 ppm TWA; 1400 mg/m3 TWA 2000 ppm IDLH (lower explosive limit)	400 ppm TWA; 1400 mg/m3 TWA
Hydrocarbon	none listed	none listed	none listed

OSHA Vacated PELs:

Ethyl Alcohol:  
1000 ppm TWA; 1900 mg/m3 TWA

Methyl Isobutyl Ketone:  
50 ppm TWA; 205 mg/m3 TWA

Ethyl Acetate:  
400 ppm TWA; 1400 mg/m3 TWA

Hydrocarbon:

No OSHA Vacated PELs are listed for this chemical.

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 gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin

exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

\*\*\*\* SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*\*

Physical State: Liquid  
Appearance: clear, colorless  
Odor: alcohol-like  
pH: Not available.  
Vapor Pressure: 48 mm Hg  
Vapor Density: 1.5  
Evaporation Rate: 3.6 (Butyl Acetate=1)  
Viscosity: Not available.  
Boiling Point: 170.8 deg F  
Freezing/Melting Point: -130 deg F  
Decomposition Temperature: Not available.  
Solubility: 100% at 20°C  
Specific Gravity/Density: 0.791  
Molecular Formula: Mixture  
Molecular Weight: Not Available

\*\*\*\* SECTION 10 - STABILITY AND REACTIVITY \*\*\*\*

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, ignition sources.

Incompatibilities with Other Materials:

Oxidizing materials can cause a vigorous reaction.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported

\*\*\*\* SECTION 11 - TOXICOLOGICAL INFORMATION \*\*\*\*

RTECS#:

CAS# 64-17-5: KQ6300000  
CAS# 108-10-1: SA9275000  
CAS# 141-78-6: AH5425000  
CAS# 64742-89-8 unlisted.

LD50/LC50:

CAS# 64-17-5: Inhalation, mouse: LC50 = 39 gm/m<sup>3</sup>/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.  
CAS# 108-10-1: Inhalation, mouse: LC50 = 23300 mg/m<sup>3</sup>; Oral, mouse: LD50 = 2671 mg/kg; Oral, rat: LD50 = 2080 mg/kg; Skin, rabbit: LD50 = 20 gm/kg.  
CAS# 141-78-6: Inhalation, mouse: LC50 = 45 gm/m<sup>3</sup>/2H; Inhalation, rat: LC50 = 200 gm/m<sup>3</sup>; Oral, mouse: LD50 = 4100 mg/kg; Oral, rabbit: LD50 = 4935 mg/kg; Oral, rat: LD50 = 5620 mg/kg; Skin, rabbit: LD50 = 20 gm/kg.  
CAS# 64742-89-8.

Carcinogenicity:

Ethyl Alcohol -

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Methyl Isobutyl Ketone -

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Ethyl Acetate -

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Hydrocarbon -

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Teratogenicity:

Prenatal exposure to ethyl alcohol is associated with a distinct pattern of congenital malformations that have been collectively termed the fetal alcohol syndromes. Among the characteristics of this syndrome are intrauterine and postnatal growth deficiency, a distinctive pattern of physical malformations and behavioral/cognitive impairment such as fine motor dysfunction and mental retardation.

\*\*\*\* SECTION 12 - ECOLOGICAL INFORMATION \*\*\*\*

Ecotoxicity:

250 ppm/6hr/goldfish/lethal/fresh water

Environmental Fate:

Ethanol: In water, will volatilize and probably degrade.

Physical/Chemical:

Not available.

Other:

Not available.

\*\*\*\* SECTION 13 - DISPOSAL CONSIDERATIONS \*\*\*\*

Dispose of in a manner consistent with federal, state, and local regulations.  
RCRA D-Series Maximum Concentration of Contaminants:

None listed.  
RCRA D-Series Chronic Toxicity Reference Levels: None listed.  
RCRA F-Series: None listed.  
RCRA P-Series: None listed.  
RCRA U-Series: CAS# 108-10-1: waste number U161 (Ignitable waste). CAS# 141-78-6: waste number U112 (Ignitable waste).

\*\*\*\* SECTION 14 - TRANSPORT INFORMATION \*\*\*\*

US DOT

No information available

IMO

No information available.

IATA

No information available.

RID/ADR

No information available.

Canadian TDG

No information available.

\*\*\*\* SECTION 15 - REGULATORY INFORMATION \*\*\*\*

US FEDERAL

TSCA

CAS# 64-17-5 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# 64742-89-8 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 108-10-1: Effective Date: October 4, 1982; Sunset Date: October 4, 1992

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 108-10-1: export notification required - Section 4

CAS# 141-78-6: export notification required - Section 4

TSCA Significant New Use Rule

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

SARA

Section 302 (RQ)

CAS# 108-10-1: final RQ = 5000 pounds (2270 kg)

CAS# 141-78-6: final RQ = 5000 pounds (2270 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 64-17-5: acute, chronic, flammable.

CAS # 108-10-1: acute, chronic, flammable, reactive.

CAS # 141-78-6: flammable.

Section 313

This material contains Methyl Isobutyl Ketone (CAS# 108-10-1, 1.0%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

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

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

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

Methyl Isobutyl Ketone can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

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

Hydrocarbon is not present on state lists from CA, PA, MN, MA, FL, or NJ.

WARNING: This product contains Ethyl Alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm.

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:

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R 11 Highly flammable.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.  
 S 7 Keep container tightly closed.

WGK (Water Danger/Protection)

CAS# 64-17-5: 0  
 CAS# 108-10-1: 1  
 CAS# 141-78-6: 1  
 CAS# 64742-89-8: No information available.

Canada

CAS# 64-17-5 is listed on Canada's DSL/NDL List.  
 CAS# 108-10-1 is listed on Canada's DSL/NDL List.  
 CAS# 141-78-6 is listed on Canada's DSL/NDL List.  
 CAS# 64742-89-8 is listed on Canada's DSL/NDL List.

WHMIS: Not available.

CAS# 64-17-5 is not listed on Canada's Ingredient Disclosure List.  
 CAS# 108-10-1 is not listed on Canada's Ingredient Disclosure List.  
 CAS# 141-78-6 is not listed on Canada's Ingredient Disclosure List.  
 CAS# 64742-89-8 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 64-17-5: OEL-AUSTRALIA:TWA 1000 ppm (1900 mg/m3). OEL-BELGIUM:TWA 1000 ppm (1880 mg/m3). OEL-CZECHOSLOVAKIA:TWA 1000 mg/m3;STEL 5000 mg/m3. OEL-DENMARK:TWA 1000 ppm (1900 mg/m3). OEL-FINLAND:TWA 1000 ppm (1900 mg/m3);STEL 1250 ppm (2400 mg/m3). OEL-FRANCE:TWA 1000 ppm (1900 mg/m3);STEL 5000 pp. OEL-GERMANY:TWA 1000 ppm (1900 mg/m3). OEL-HUNGARY:TWA 1000 mg/m3;STEL 3000 mg/m3. OEL-THE NETHERLANDS:TWA 1000 ppm (1900 mg/m3). OEL-THE PHILIPPINES:TWA 1000 ppm (1900 mg/m3). OEL-POLAND:TWA 1000 mg/m3. OEL-RUSSIA:STEL 1000 mg/m3. OEL-SWEDEN:TWA 1000 ppm (1900 mg/m3). OEL-SWITZERLAND:TWA 1000 ppm (1900 mg/m3). OEL-THAILAND:TWA 1000 ppm (1900 mg/m3). OEL-TURKEY:TWA 1000 ppm (1900 mg/m3). OEL-UNITED KINGDOM:TWA 1000 ppm (1900 mg/m3) JAN9. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV  
 CAS# 141-78-6: OEL-AUSTRALIA:TWA 400 ppm (1400 mg/m3). OEL-BELGIUM:TWA 400 ppm (1440 mg/m3). OEL-CZECHOSLOVAKIA:TWA 400 mg/m3;STEL 2000 mg/m3. OEL-DENMARK:TWA 300 ppm (1100 mg/m3). OEL-FINLAND:TWA 300 ppm (1100 mg/m3);STEL 500 ppm (1800 mg/m3). OEL-FRANCE:TWA 400 ppm (1400 mg/m3). OEL-GERMANY:TWA 400 ppm (1400 mg/m3). OEL-HUNGARY:TWA 400 mg/m3;STEL 1200 mg/m3. OEL-JAPAN:TWA 400 ppm (1400 mg/m3). OEL-THE NETHERLANDS:TWA 400 ppm (1400 mg/m3) JAN9. OEL-THE PHILIPPINES:TWA 400 ppm (1400 mg/m3) JAN9. OEL-POLAND:TWA 200 ppm. OEL-RUSSIA:TWA 400 ppm;STEL 200 mg/m3. OEL-SWEDEN:TWA 150 ppm (500 mg/m3);STEL 300 ppm (1100 mg/m3). OEL-SWITZERLAND:TWA 400 ppm (1400 mg/m3);STEL 800 ppm. OEL-TURKEY:TWA 400 ppm (1400 mg/m3). OEL-UNITED KINGDOM:TWA 400 ppm (1400 mg/m3). OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

\*\*\*\* SECTION 16 - ADDITIONAL INFORMATION \*\*\*\*

MSDS Creation Date: 1/17/1996 Revision #4 Date: 12/12/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.