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INDEX: D13191275 CAT. NO: A406P4 PO. NBR: TERRIE PARENTEAU/VC/111401

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

Ethanol CDA 19
1068

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

Product Name: Ethanol CDA 19

Product Numbers:
A406-20, A406F-1GAL, A406P-4

Synonyms:
Ethyl alcohol, denatured; Grain alcohol, denatured; Ethyl hydroxide,
denatured; Ethyl Ethyl alcohol, denatured; Grain alcohol, denatured;
Ethyl hydroxide, denatured; Ethyl hydrate, denatured; Algarin,
denatured.

Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
Or CHEMTREC assistance, call: 800-424-9300
Or International CHEMTREC assistance, call: 703-527-3887

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

CAS#	Chemical Name	%	EINECS#
64-17-5	Ethyl alcohol	95.2	200-578-6
108-10-1	Methyl isobutyl ketone	3.8	203-550-1
64742-89-8	Solvent naphtha (petroleum), light aliphatic	1.0	265-192-2

Hazard Symbols: F
Risk Phrases: 11

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

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 16.66 deg C.
Warning: Flammable liquid and vapor. Causes respiratory tract
irritation. May cause digestive tract irritation. May cause central
nervous system depression. Causes severe eye irritation. This
substance has caused adverse reproductive and fetal effects in
humans. Causes moderate skin irritation. May cause liver, kidney and
heart damage.

Target Organs: Kidneys, heart, central nervous system, liver.

Potential Health Effects

Eye:
Causes severe eye irritation. May cause painful sensitization to
light. May cause chemical conjunctivitis and corneal damage.

Skin:
Causes moderate skin irritation. May be absorbed through the skin.
May cause cyanosis of the extremities.

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 liver and kidney damage. May cause fetal effects. 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. Flush skin with plenty of soap and water for at
least 15 minutes while removing contaminated clothing and shoes. Wash
clothing before reuse.

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

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aid. Induce vomiting by giving one teaspoon of Syrup of Ipecac.
Inhalation:
Remove from exposure to fresh air immediately. If not breathing,
give artificial respiration. If breathing is difficult, give oxygen.
Get medical aid.

Notes to Physician:
Treat symptomatically and supportively. Persons with skin or eye
disorders or liver, kidney, chronic respiratory diseases, or central
and peripheral nervous system diseases may be at increased risk from
exposure to this substance.

Antidote:
None reported.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. 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.

NFPA Rating: (est.) Health: 0; Flammability: 3; Reactivity: 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. Remove contaminated clothing and
wash before reuse. 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. Avoid
contact with 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.

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

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethyl alcohol	1000 ppm	1000 ppm TWA; 1900 mg/m ³ TWA 3300 ppm IDLH (10 Percent Lower explosive limit)	1000 ppm TWA; 1900 mg/m ³ TWA
Methyl isobutyl ketone	50 ppm; 75 ppm STEL	50 ppm TWA; 205 mg/m ³ TWA 500 ppm IDLH	100 ppm TWA; 410 mg/m ³ TWA
Solvent naphtha (petroleum), light aliphatic	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; 75 ppm STEL; 300 mg/m³ STEL
Solvent naphtha (petroleum), light aliphatic:
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 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 a respirator's use.

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

Physical State: Liquid
Appearance: clear, colorless
Odor: alcohol-like
pH: Not available.
Vapor Pressure: 50 mm Hg
Vapor Density: 1.5
Evaporation Rate: 3.3 (Butyl Acetate=1)
Viscosity: Not available.
Boiling Point: 174 deg F
Freezing/Melting Point: < 121 deg F
Autoignition Temperature: 363 deg C (685.40 deg F)
Flash Point: 16.66 deg C (61.99 deg F)
Explosion Limits, lower: 3.3 vol %
Explosion Limits, upper: 19 vol %
Decomposition Temperature:
Solubility: Miscible.
Specific Gravity/Density: 0.8120
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, 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# 108-10-1: SA9275000
CAS# 64742-89-8 unlisted.
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.
CAS# 108-10-1: Draize test, rabbit, eye: 40 mg Severe; Draize test, rabbit, eye: 100 uL/24H Moderate; Draize test, rabbit, skin: 500 mg/24H Mild; Inhalation, mouse: LC50 = 23300 mg/m³; Inhalation, rat: LC50 = 100 gm/m³; Oral, mouse: LD50 = 1900 mg/kg; Oral, rat: LD50 = 2080 mg/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.
Solvent naphtha (petroleum), light aliphatic -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
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".
Teratogenicity:
CAS# 64-17-5: 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 Effects:
CAS# 64-17-5: 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).
Neurotoxicity:
No information available.
Mutagenicity:
CAS# 64-17-5: 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).
Other Studies:
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 CAS# 64-17-5: 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.

**** 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 Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 108-10-1: waste number U161; (Ignitable waste).

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

US DOT
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# 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: 4/12b
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)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes

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CAS # 64-17-5: acute, chronic, flammable.
 CAS # 108-10-1: acute, chronic, flammable, reactive.

Section 313

This material contains Methyl isobutyl ketone (CAS# 108-10-1, 38), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

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.

Solvent naphtha (petroleum), light aliphatic 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:

R 11 Highly flammable.

Safety Phrases:

S 7 Keep container tightly closed.

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

WGK (Water Danger/Protection)

CAS# 64-17-5: 0

CAS# 108-10-1: 1

CAS# 64742-89-8: No information available.

United Kingdom Occupational Exposure Limits

CAS# 64-17-5: OES-United Kingdom, TWA 1000 ppm TWA; 1920 mg/m3 TWA

CAS# 108-10-1: OES-United Kingdom, TWA 50 ppm TWA; 208 mg/m3 TWA

CAS# 108-10-1: OES-United Kingdom, STEL 100 ppm STEL; 416 mg/m3 STEL

CAS# 108-10-1: OES-United Kingdom, STEL 100 ppm STEL; 416 mg/m3 STEL

Canada

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

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

CAS# 64742-89-8 is listed on Canada's DSL List.

This product has a WHMIS classification of B2, D2A.

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

CAS# 108-10-1 is 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 ppm

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# 108-10-1: Not available.

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

MSDS Creation Date: 7/28/1999 Revision #3 Date: 8/24/2001

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of

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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 the company 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 the company has been advised of the possibility of such damages.