Material Safety Data Sheet

Ethyl Alcohol, denatured

Section 1. Chemical Product and Company Identification

MSDS Name : Ethyl Alcohol, denatured

CAS No. : 64-17-5

Synonyms : Ethanol denatured with Bitrex

Company Identification:

DUKSAN PURE CHEMICALS

635-1, SUNGKOKDONG, DANWONGU, ANSANSHI, KYUNGKIDO, KOREA

Production code : 20, 3950, 3951

Emergency Number: 82-31-495-4055

Section 2. Hazard Identification

Classification :

Flammable liquids, Category 2

Hazard Symbol :

Signal Word : Danger

Hazard Statements :

H225 : Highly flammable liquid and vapor.

Precautionary Statements :

P210 : Keep away fro heat / sparks / open flames/hot surfaces. – No smoking.

Section 3. Composition, Information on Ingrdients

Component	CAS Number	Concentration %
Ethyl Alcohol	64-17-5	>95
Water	7732-18-5	0~5
Bitex	78-93-3	<0.1

Section 4. First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Gently lift eye lids and flush continuously with water.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. 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. Wash mouth out with water.
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. Do NOT use mouth-to-mouth resuscitation.
Notes to Physician: Treat symptomatically and supportively. Persons with skin or eye disorders or liver, kidney, chronic respiratory diseases, or central and peripheral nervous sytem diseases may be at increased risk from exposure to this substance.

Section 5. Fire Fighting Measures

General Information: Replace fluid and electrolytes. 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. Flammable liquid and vapor.

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. Use water spray, dry chemical, carbon dioxide, or chemical foam. Do NOT use straight streams of water.

Flash Point: 12 deg C (53.60 deg F)
Autoignition Temperature: 370 deg C (698.00 deg F)
Explosion Limits, Lower:4 Vol %
Upper: 19 Vol %
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 breathing dust, mist, or vapor. Avoid contact with eyes, skin, and clothing. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. 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 cool, dry place. 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 Control/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
Ethanol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH (10% LEL)	1000 ppm TWA; 1900 mg/m3 TWA
Bitrax	200 ppm TWA; 300 ppm STEL	200 ppm TWA; 590 mg/m3 TWA 3000 ppm IDLH	200 ppm TWA; 590 mg/m3 TWA

OSHA Vacated PELs: Ethanol: 1000 ppm TWA; 1900 mg/m3 TWA Bitrax: 200 ppm TWA; 590

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. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9. . Physical and Chemical Properties

Physical State : Clear liquid

Appearance : colorless

Odor : alcohol-like

pH : Not available.

Vapor Pressure : 59mbar @20 deg C

Vapor Density : 1.6

Evaporation Rate : Not available.

Viscosity : 1.2 mPa s @20 deg C

Boiling Point : 78 deg C @760mmHg

Freezing/Melting Point : -144 deg C

Decomposition Temperature : Not available.

Solubility : Miscible.

Specific Gravity/Density : 0.780

Molecular Formula : C2H6O

Molecular Weight : 46.06

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, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11. Toxicological Information

RTECS#:

CAS# 64-17-5: KQ6300000

CAS# 78-93-3: EL6475000

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# 78-93-3:

Draize test, rabbit, eye: 80 mg;

Draize test, rabbit, skin: 500 mg/24H Moderate;

Draize test, rabbit, skin: 402 mg/24H Mild;

Inhalation, mouse: LC50 = 32 gm/m3/4H;

Inhalation, rat: LC50 = 23500 mg/m3/8H;

Oral, mouse: LD50 = 3000 mg/kg;

Oral, rat: LD50 = 2737 mg/kg;

Skin, rabbit: LD50 = 6480 mg/kg;

Carcinogenicity:

CAS# 64-17-5:

- **ACGIH:** Not listed.
- **California:** Not listed.
- **NTP:** Not listed.
- **IARC:** Group 1 carcinogen

CAS# 78-93-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

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: 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: 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 Studies:

Section 12. Ecological Information

Ecotoxicity: Fish: Leuciscus idus: LC50 = 12900-15300 mg/L; 48 h; .Fish: Guppy: LC50 = 12900-15300 mg/L; 17 d; .Bacteria: Pseudomonas putida: LC50 = 12900-15300 mg/L; 16 h; .Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3캢Fish: 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 available.

Other: No information available.

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# 78-93-3: waste number U159 (Ignitable waste, Toxic waste).

Section 14. Tansport Informations

	US DOT	Canada TDG
Shipping Name:	ETHANOL	ETHANOL
Hazard Class:	3	3
UN Number:	UN1170	UN1170
Packing Group:	II	II

Section 15. Regulatory Informations

US FEDERAL

TSCA

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

CAS# 78-93-3 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 78-93-3: Effective 10/4/82, Sunset 10/4/92

Chemical Test Rules

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

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

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

CERCLA Hazardous Substances and corresponding RQs

CAS# 78-93-3: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 64-17-5: immediate, delayed, fire.

CAS # 78-93-3: immediate, delayed, fire.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

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

CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 78-93-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Ethanol, a chemical known to the state of California to cause developmental reproductive toxicity.

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 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# 78-93-3: 1

Canada - DSL/NDSL

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

CAS# 78-93-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D1A, 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# 78-93-3 is listed on the Canadian Ingredient Disclosure List.

Section 16. Other Informations

MSDS Creation Date: 7/26/1999

Revision #2 Date: 10/09/2013

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 event shall DUKSAN 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 DUKSAN has been advised of the possibility of such damages.