REAGENTS DUKSAN

SAFETY DATA SHEET

According to OSHA Hazcom Standard 29 CFR 1910.1200

Ethyl Alcohol absolute denatured 99.9%

Date of issue: 2020-12-29 **Revision date: 2025-09-02** **Version: R0004.0001**

1. IDENTIFICATION

A. Product name

- Ethyl Alcohol absolute denatured 99.9%

B. Recommended use and restriction on use

- General use : for experimental, research and industrial use
- Restriction on use : Never drink, Not used except for experimental, research and industrial applications.

C. Manufacturer / Supplier / Distributor information

○ **Manufacturer information**

- Company name : DUKSAN PURE CHEMICALS
- Address : 53,SINWONRO 133BEONGIL, DANWONGU, ANSANSHI, GYUNGGIDO, KOREA
- Emergency telephone number : 82-31-495-4055

○ **Supplier/Distributer information**

- Company name : DUKSAN PURE CHEMICALS
- Address : 53,SINWONRO 133BEONGIL, DANWONGU, ANSANSHI, GYUNGGIDO, KOREA
- Telephone number : 82-31-495-4055
- Emergency telephone number : 82-31-495-4055
- Fax number : 82-31-495-4058

2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category2
- Serious eye damage/irritation : Category2A
- Carcinogenicity : Category1A

B. GHS label elements

○ **Hazard symbols**



○ **Signal words**

- Danger

○ **Hazard statements**

- H225 Highly flammable liquid and vapour
- H319 Causes serious eye irritation
- H350 May cause cancer

○ **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.

- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

○ **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 3, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Ethanol	Alcohol anhydrous ; Alcohol dehydrated ; Ethyl alcohol ; Ethanol solution ; Alcohol ; Fermentation alcohol ; Algrain ; Ethyl hydrate ; Ethyl hydroxide	64-17-5	99~100
Water	Dihydrogen oxide ; Oxidane	7732-18-5	0~1
N-[2-(2,6-Dimethylphenyl)amino]-2-oxoethyl]-N,N-diethylbenzenemethanaminium benzoate	Bitrex	3734-33-6	0.0008

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Remove contaminated clothing, shoes and isolate.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Ventilate closed spaces before entering.
- Move container to safe area from the leak area.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away,isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Do not use plastic containers.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Wash thoroughly after handling.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Store according to current laws and regulations
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ **ACGIH TLV**

- [Ethanol] : STEL, 1000 ppm (1880 mg/m3)

○ **OSHA PEL**

- [Ethanol]:1000ppm 1900mg/m3

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

○ **Respiratory protection**

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.

○ **Eye protection**

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

○ **Hand protection**

- Wear appropriate chemical resistant glove.

○ **Skin protection**

- Wear appropriate chemical resistant protective clothing.

○ **Others**

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid
- Color	colorless
B. Odor	wine or whisky odor

C. Odor threshold	10 ppm
D. pH	Not available
E. Melting point/Freezing point	-114.1 ℃
F. Initial Boiling Point/Boiling Ranges	78.5 ℃
G. Flash point	13 ℃
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	19 / 3.3 %
K. Vapour pressure	59.3 ㎜Hg (25℃)
L. Solubility	100 g/100㎖ (25℃)
M. Vapour density	1.59 (air=1)
N. Specific gravity(Relative density)	0.8 (water=1)
O. Partition coefficient of n-octanol/water	-0.31
P. Autoignition temperature	363 ℃
Q. Decomposition temperature	Not available
R. Viscosity	1.17 cP (20℃)
S. Molecular weight	46.07

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

○ **(Respiratory tracts)**

- Not available

○ **(Oral)**

- Not available

○ **(Eye·Skin)**

- Causes serious eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

○ **Acute toxicity**

*** Oral**

- Product (ATEmix) : >5000mg/kg
- [Ethanol] : LD50 = 6200 ㎎/㎏ Rat (HSDB)
- [Water] : LD50 > 90000 ㎎/㎏ Rat (KOSHA)
- [N-[2-(2,6-Dimethylphenyl)amino]-2-oxoethyl]-N,N-diethylbenzenemethanaminium benzoate] : LD50 584 ㎎/㎏ Rat(NLM)

*** Dermal**

- Not available

*** Inhalation**

- Product (ATEmix) : >50.0mg/L
- [Ethanol] : LC50 = 59.59 mg/L/4hr Rat (HSDB)

○ **Skin corrosion/irritation**
- Not available

○ **Serious eye damage/irritation**
- Causes serious eye irritation

○ **Respiratory sensitization**
- Not available

○ **Skin sensitization**
- Not available

○ **Carcinogenicity**

*** IARC**
- [Ethanol] : Group 1

*** OSHA**
- Not available

*** ACGIH**
- [Ethanol] : A3

*** NTP**
- Not available

*** EU CLP**
- Not available

○ **Germ cell mutagenicity**
- Not available

○ **Reproductive toxicity**
- Not available

○ **STOT-single exposure**
- Not available

○ **STOT-repeated exposure**
- Not available

○ **Aspiration hazard**
- Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

○ **Fish**
- [Ethanol] : LC50 >100 ㎎/ℓ 96 hr Pimephales promelas (SIDS 2005)

○ **Crustaceans**
- [Ethanol] : LC50 5012 ㎎/ℓ 48 hr Ceriodaphnia dubia(other guideline: ASTM E729-80) (ECHA)

○ **Algae**
- [Ethanol] : ErC50 275 ㎎/ℓ 72 hr Chlorella vulgaris(OECD Guideline 201) (ECHA)

B. Persistence and degradability

○ **Persistence**
- [Ethanol] : -0.35 log Kow
- [Water] : log Kow = -1.38
- [N-[2-(2,6-Dimethylphenyl)amino]-2-oxoethyl]-N,N-diethylbenzenemethanaminium benzoate] : log Kow 1.78 (NLM)

○ **Degradability**
- [Ethanol] : BOD5/COD = 0.57 (IUCLID)

C. Bioaccumulative potential

○ **Bioaccumulative potential**
- [Ethanol] : BCF 1

○ **Biodegration**
- [Ethanol] : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed) (IUCLID)

D. Mobility in soil

- [Ethanol] : Koc = 1

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 1170

B. Proper shipping name

- ETHANOL OR ETHYL ALCOHOL OR ETHANOL SOLUTIONS OR ETHYL ALCOHOL SOLUTIONS

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- II

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-D (Flammable liquids)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

○ **POPs Management Law**

- Not applicable

○ **Information of EU Classification**

*** Classification**

- [Ethanol] : H225

○ **U.S. Federal regulations**

*** OSHA PROCESS SAFETY (29CFR1910.119)**

- Not applicable

*** CERCLA Section 103 (40CFR302.4)**

- Not applicable

*** EPCRA Section 302 (40CFR355.30)**

- Not applicable

*** EPCRA Section 304 (40CFR355.40)**

- Not applicable

*** EPCRA Section 313 (40CFR372.65)**

- Not applicable

○ **Rotterdam Convention listed ingredients**

- Not applicable

○ **Stockholm Convention listed ingredients**

- Not applicable

○ **Montreal Protocol listed ingredients**

- Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2020-12-29

C. Revision number and Last date revised

- 3 times, 2025-09-02

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).