

## Material Safety Data Sheet

Version 4.0  
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## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Ethanol  
Product Number : E7023  
Brand : Sigma-Aldrich  
Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA  
Telephone : +18003255832  
Fax : +18003255052  
Emergency Phone # : (314) 776-6555

## 2. HAZARDS IDENTIFICATION

## Emergency Overview

## OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant

## Target Organs

Nerves., Liver, Heart

## GHS Label elements, Including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.  
H315 + H320 Causes skin and eye irritation.  
H335 May cause respiratory irritation.  
H401 Toxic to aquatic life.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

## HMIS Classification

Health hazard: 2  
Chronic Health Hazard: \*  
Flammability: 3  
Physical hazards: 0

## NFPA Rating

Health hazard: 2  
Fire: 3  
Reactivity Hazard: 0

## Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.  
Skin May be harmful if absorbed through skin. Causes skin irritation.

Eyes Causes eye irritation.  
Ingestion May be harmful if swallowed.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Ethyl alcohol  
Formula : C<sub>2</sub>H<sub>6</sub>O  
Molecular Weight : 46.07 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Ethanol			
64-17-5	200-578-6	603-002-00-5	-

## 4. FIRST AID MEASURES

## General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

## If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

## In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

## In case of eye contact

Flush eyes with water as a precaution.

## If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## 5. FIRE-FIGHTING MEASURES

## Suitable extinguishing media

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

## Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

## Further information

Use water spray to cool unopened containers.

## 6. ACCIDENTAL RELEASE MEASURES

## Personal precautions

Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

## Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

## Methods and materials for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

## 7. HANDLING AND STORAGE

## Precautions for safe handling

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

**Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

hygroscopic

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis
Ethanol	64-17-5	TWA	1,000 ppm	2009-01-01	USA, ACGIH Threshold Limit Values (TLV)
Remarks	Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.				
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	1989-01-19	USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	1997-08-04	USA, Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
The value in mg/m <sup>3</sup> is approximate.					

**Personal protective equipment****Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**

Handle with gloves.

**Eye protection**

Face shield and safety glasses

**Skin and body protection**

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	liquid, clear
Colour	colourless

**Safety data**

pH	no data available
Melting point	-144.0 °C (-227.2 °F)
Boiling point	78.0 - 80.0 °C (172.4 - 176.0 °F)
Flash point	14.0 °C (57.2 °F) - closed cup

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Ignition temperature	363 °C (685 °F)
Lower explosion limit	3.3 %(V)
Upper explosion limit	19 %(V)
Vapour pressure	59.5 hPa (44.6 mmHg) at 20.0 °C (68.0 °F)
Density	0.79 g/cm <sup>3</sup>
Water solubility	completely soluble

**10. STABILITY AND REACTIVITY****Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Vapours may form explosive mixture with air.

**Conditions to avoid**

Heat, flames and sparks.

**Materials to avoid**

Alkali metals, Ammonia, Oxidizing agents, Peroxides

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - None known.

**11. TOXICOLOGICAL INFORMATION****Acute toxicity**

LD50 Oral - rat - 7,060 mg/kg

Remarks: Lungs, Thorax, or Respiration:Other changes.

LC50 Inhalation - rat - 10 h - 20000 ppm

**Skin corrosion/irritation**

Skin - rabbit - Irritating to skin. - 24 h

**Serious eye damage/eye irritation**

Eyes - rabbit - Mild eye irritation - 24 h

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

Carcinogenicity - mouse - Oral

Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Liver:Tumors. Blood:Lymphomas including Hodgkin's disease.

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

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Reproductive toxicity - Human - female - Oral  
Effects on Newborn: Apgar score (human only). Effects on Newborn: Other neonatal measures or effects. Effects on Newborn: Drug dependence.

**Specific target organ toxicity - single exposure (GHS)**

Inhalation - May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure (GHS)**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Skin</b>	May be harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.

**Signs and Symptoms of Exposure**

Central nervous system depression, narcosis, Damage to the heart., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Additional information**

RTECS: KQ6300000

**12. ECOLOGICAL INFORMATION**

**Toxicity**

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 13,000.00 mg/l - 96 h
	LC50 - Oncorhynchus mykiss (rainbow trout) - 10,400.00 mg/l - 96 h
	LC50 - Pimephales promelas (fathead minnow) - 15,300.00 mg/l - 96 h
	LC50 - other fish - 10,000.00 mg/l - 24 h

Toxicity to daphnia and other aquatic invertebrates.	EC50 - Daphnia magna (Water flea) - 9.30 mg/l - 48 h
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**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

no data available

**13. DISPOSAL CONSIDERATIONS**

**Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

**14. TRANSPORT INFORMATION**

**DOT (US)**

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UN-Number: 1170 Class: 3 Packing group: II  
Proper shipping name: Ethanol  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**  
UN-Number: 1170 Class: 3 Packing group: II EMS-No: F-E, S-D  
Proper shipping name: ETHANOL  
Marine pollutant: No

**IATA**  
UN-Number: 1170 Class: 3 Packing group: II  
Proper shipping name: Ethanol

**15. REGULATORY INFORMATION**

**OSHA Hazards**

Flammable liquid, Target Organ Effect, Irritant

**DSL Status**

All components of this product are on the Canadian DSL list.

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

Ethanol	CAS-No. 64-17-5	Revision Date 2007-03-01
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**Pennsylvania Right To Know Components**

Ethanol	CAS-No. 64-17-5	Revision Date 2007-03-01
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**New Jersey Right To Know Components**

Ethanol	CAS-No. 64-17-5	Revision Date 2007-03-01
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**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**16. OTHER INFORMATION**

**Further information**

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