


<b>MSDS</b>	<b>Material Safety Data Sheet</b>
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## **ETHYL ETHER**

## 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

PRODUCT NAME	Ethyl ether
RECOMMENDED USE & RESTRICTIONS ON USE	Research use only
INFORMATION OF MANUFACTURER/IMPORTER/SUPPLIER	
COMPANY	
ADDRESS	
EMERGENCY PHONE	
E-MAIL ADDRESS	

## 2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION	Flammable liquids : Category 1 Acute toxicity(Oral) : Category 4 Reproductive toxicity : Category 2 Specific target organ toxicity Single exposure : Category 3(respiratory irritation) Specific target organ toxicity Single exposure : Category 3(anesthesia) Aspiration toxicity : Category 2	
LABEL ELEMENTS	PICTOGRAM	
	HAZARD SYMBOL	DANGER
	HAZARD STATEMENTS	Extremely flammable liquid and vapour. Harmful if swallowed. May be fatal if swallowed and enters airways. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing genetic defects. Suspected of damaging fertility or the unborn child.

	<p>PRECAUTIONAR Y STATEMENTS</p>	<p>Obtain special instructions before use.</p> <p>Do not handle until all safety precautions have been read and understood.</p> <p>Keep away from heat/sparks/open flames/hot surfaces. No smoking.</p> <p>Keep container tightly closed.</p> <p>Ground/bond container and receiving equipment.</p> <p>Use explosion-proof electrical/ventilating/lighting equipment.</p> <p>Use only non-sparking tools.</p> <p>Take precautionary measures against static discharge.</p> <p>Do not breathe dust/fume/gas/mist/vapours/spray.</p> <p>Wash thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p> <p>Use only outdoors or in a well-ventilated area.</p> <p>Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>Use personal protective equipment as required.</p> <p>IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</p> <p>IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>IF exposed or concerned: Get medical advice/attention.</p> <p>Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>Rinse mouth.</p> <p>Do NOT induce vomiting.</p> <p>In case of fire: Use ... for extinction.</p> <p>Store locked up.</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p> <p>Store in a well-ventilated place. Keep cool.</p> <p>Dispose of this material and its container in accordance with</p>
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		local/regional/national/international regulation.
OTHER HAZARDS (NFPA)	Health	1
	Fire	4
	Reactivity	1

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY	SYNONYMS	CAS NUMBER	ASSAY
Ethyl ether	Diethyl ether; Ether	60-29-7	Above 99.5%(GR, HPLC); Above 99%(EP)

### 4. FIRST AID MEASURES

GENERAL ADVICE	Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.
IN CASE OF EYE CONTACT	Remove any contact lenses at once. Flush eyes well with flooding amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, transport to a hospital immediately.
IN CASE OF SKIN CONTACT	Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, transport to a hospital immediately.
IF INHALED	Move victim to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Maintain normal body temperature with a blanket. If irritation persists, transport to a hospital immediately.
IF SWALLOWED	Rinse mouth, give plenty of water to dilute the substance. Never give anything by mouth to an unconscious person. Transport to a hospital immediately.

### 5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA	Carbon dioxide, dry chemical powder, foam, Do not use water.
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL	Flammable liquid. Hazardous toxic and irritating fumes or smoke may be emitted. Vapors may travel considerable distance to ignition source and flash back.
SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:	Firemen should wear normal protective equipment(full bunker gear)and positive-pressure self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.
ENVIRONMENTAL PRECAUTIONS	Prevent spills from entering sewers, watercourses or low areas.
METHODS FOR CLEANING UP	Do not touch spilled material without suitable protection. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose of contaminated clothing.

## 7. HANDLING AND STORAGE

PRECAUTION FOR SAFE HANDLING	Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Handle material with suitable protection away from source of heat or ignition and use non-sparking type tools. Use explosion-proof electrical equipments and lighting.
CONDITIONS FOR SAFE STORAGE	Store away from sunlight in well-ventilated dry place at room temperature (preferably cool place). Keep container tightly closed.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE STANDARDS	ACGIH	TWA 400 ppm STEL 500 ppm
APPROPRIATE ENGINEERING CONTROLS:		Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
INDIVIDUAL PROTECTION MEASURES	RESPIRATORY PROTECTION	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup Sigma-Aldrich - 270997 Page 4 of 7 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).
	EYE PROTECTION	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
	SKIN PROTECTION	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
	BODY PROTECTION	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	FORM	Liquid
	COLOR	Colorless
ODOUR		Characteristic odor

ODORODOUR THRESHOLD VALUE		No data
pH		No data
FREEZING POINT :		-116 °C
INITIAL BOILING POINT		35 °C
FLASH POINT		-45 °C (c.c.)
EVAPORATING RATE		No data
FLAMMABILITY(solid, gas)		No data
EXPLOSIVE LIMITS		48 / 1.7 %
VAPOR PRESSURE		58.6 kPa (20°C)
SOLUBILITY IN	WATER	6.9 g/100mL (20°C)
VAPOR DENSITY		2.6
RELATIVE DENSITY		0.7
PARTITION COEFFICIENT: N-OCTANOL/WATER		0.89
AUTOIGNITION TEMPERATURE		160 ~180 °C
DECOMPOSITION TEMPERATURE		No data
VISCOSITY		0.2448 cP (20°C)
MOLECULAR WEIGHT		74.12

## 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY & POSSIBILITY OF HAZARDOUS REACTIONS	Extremely flammable liquid and vapour. May cause fire and explosion by violent polymerization. At(or above) flash point, may form explosive mixture. Container may explode when heated. Extremely flammable: easily ignite by heat, sparks, flames.
CONDITIONS TO AVOID	Sunlight, heat, open flames, high temperature, sparks, static electrical charge, other ignition sources
INCOMPATIBLE MATERIALS	Oxidizers, peroxides, azides, chlorine compounds
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon monoxide.

## 11. TOXICOLOGICAL INFORMATION

INFORMATION ON THE LIKELY ROUTES OF EXPOSURES:	No data	
HEALTH HAZARD INFORMATION	ACUTE TOXICITY	LDLo(oral, human-man): 260mg/kg(RTECS) LD50(oral, rat): 1215mg/kg(RTECS) LD50(skin, rabbit): >20mL/kg(RTECS) LC50(ihl, mouse): 31000ppm/30M(RTECS)
	SKIN CORROSION/ SKIN IRRITATION	Skin; rabbit; 360mg; Mild(UCDS** 4/5/1973) Skin; rat; 50mg/24H; Severe(HIFUAG 22,373,1980)
	EYE DAMAGE/ EYE IRRITATION	Eye; human; 100 ppm; Mild(JIHTAB 25,282,1943) Eye; rabbit; 100mg; Moderate(FEPRA7 35,729,1976)
	RESPIRATORY SENSITIZATION	No data
	SKIN SENSITIZATION	No data
	CARCINOGENICITY	IARC: No data OSHA: No data ACGIH: No data NTP: No data EU CLP: No data
	GERM CELL MUTAGENICITY	DNA repair; E.coli; 35670µg/well/16H (RTECS) DNA inhibition; mouse Embryo; 2850mg/L (RTECS)
	TOXIC TO REPRODUCTION	Rat: Absorption to embryo(IUCLID, 2005) Rat: An increase in cleft palate to embryo(DFGOT vol 13, 1999) Rat and mouse; Embryo's externals and abnormality of internal organs and frame(DFGOT vol 13,1999)
	SPECIFIC TARGET ORGAN TOXICITY SINGLE EXPOSURE	Human; the respiratory tract irritation with narcotic(DFGOT vol 13,1999, PATTY 5th, 2005, IUCLID, 2005)
	SPECIFIC TARGET ORGAN TOXICITY REPEATED EXPOSURE	No data



	ASPIRATION HAZARD	No data
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## 12. ECOLOGICAL INFORMATION

ECOTOXICITY	TO FISH	No data
	TO CRUSTACEA	LC50: 1378.63 mg/L, 48hr;(KOSHA)
	TO OTHER AQUATIC LIFE	No data
PERSISTENCE/ DEGRADABILITY	PERSISTENCE	No data
	DEGRADABILITY	No data
BIOACCUMULATION POTENTIAL	ACCUMUKATION	No data
	BIODEGRADABILITY	No data
MOBILITY IN SOIL		No data
OTHER ADVERSE EFFECTS		No data

## 13. DISPOSAL CONSIDERATION

DISPOSAL METHODS	Use only licensed transporters and permitted facilities for waste disposal.
DISPOSAL CONSIDERATIONS	Dispose of this material and its container in accordance with local/regional/national/international regulation.

## 14. TRANSPORT INFORMATION

IATA	
UN NUMBER	1155
UN PROPER SHIPPING NAME	DIETHYL EHTER(ETHYL ETHER)
TRANSPORT HAZARD CLASS	3
PACKING GROUP	1
MARINE POLLUTANT	No data
SPECIAL PRECAUTIONS FOR USER	
IN CASE OF FIRE	F – E
IN CASE OF LEAK	S - D

## 15. REGULATORY INFORMATION

Occupational Safety and Health Act	Substance Requiring Working Environment Measurement (period : 6 month) Hazardous Substance Requiring Management Substance Requiring Exposure Standards	
Toxic Chemicals Control Act	No data	
Safety Control of Dangerous Substance Act	4-special flammable materials; 50L	
Wastes Control Act	No data	
Persistent Organic Pollutants Control Act	Not listed	
US REGULATIONS	OSHA	Not listed
	CERCLA	45.3599 kg 100 lb
	EPCRA302	Not listed
	EPCRA304	Not listed
	EPCRA313	Not listed
	ROTTERDAM CONVENTION	Not listed
	STOCKHOLM CONVENTION	Not listed
	MONTREAL PROTOCOL	Not listed
EU CLASSIFICATION INFORMATION	CLASSIFICATION	F+; R12 R19 Xn; R22 66 R67
	RISK PHRASES	R12, R19, R22, R66, R67
	SAFETY PHRASES	S2, S9, S16, S29, S33

## 16. OTHER INFORMATION

REFERENCES AND SOURCES FOR DATA	Wako Corporation Sigma Aldrich Corporation
OTHER	The information in this MSDS is based on several references and the present state of our knowledge. However, the MSDS dose not always cover all information about product. The information in this MSDS is only provision of information, and It does not represent any guarantee of the properties of the product.