

Ethyl Ether**106-4**

Version 2.1

Revision Date 08/16/2018

Print Date 10/17/2019

SECTION 1. IDENTIFICATION

Product name : Ethyl Ether

Number : 000000011366

Product Use Description : Solvent

Manufacturer or supplier's details : Honeywell International Inc.
1953 South Harvey Street
Muskegon, MI 49442

For more information call : 1-800-368-0050
+1-231-726-3171

(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : **Medical: 1-800-498-5701 or +1-303-389-1414**
: **Transportation (CHEMTREC): 1-800-424-9300 or**
: **+1-703-527-3887**
:
: (24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Form : liquid, clear

Color : colourless

Odor : sweet pungent

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Classification of the substance or mixture

Classification of the substance or mixture : Flammable liquids, Category 1
Acute toxicity, Category 4, Oral
Specific target organ toxicity - single exposure, Category 3,
Central nervous system

GHS Label elements, including precautionary statements

Symbol(s)



Signal word

: Danger

Hazard statements

: Extremely flammable liquid and vapour.
Harmful if swallowed.
May cause drowsiness or dizziness.

Precautionary statements

: **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
IF ON SKIN (or hair): Remove/ Take off immediately all

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contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
Keep cool.
Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity

ACGIH: Ethanol 64-17-5
A3: Confirmed animal carcinogen

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₄H₁₀O

Chemical nature : Mixture

Chemical name	CAS-No.	Concentration
Diethyl ether	60-29-7	98.00 %
Ethanol	64-17-5	2.00 %

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SECTION 4. FIRST AID MEASURES

- Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician.
- Skin contact : Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician if irritation develops or persists.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician.
- Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician.

Notes to physician

- Indication of immediate medical attention and special treatment needed, if necessary : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Carbon dioxide (CO₂)
Dry chemical
Foam
Cool closed containers exposed to fire with water spray.
- Unsuitable extinguishing media : Water may be ineffective.
Do not use a solid water stream as it may scatter and spread fire.
- Specific hazards during firefighting : Extremely flammable.
Vapours may form explosive mixtures with air.
Vapours are heavier than air and may spread along floors.

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Vapors may travel to areas away from work site before igniting/flashing back to vapor source.
Do not allow run-off from fire fighting to enter drains or water courses.
In case of fire hazardous decomposition products may be produced such as:
Carbon monoxide
Carbon dioxide (CO₂)
May form explosive peroxides.

Special protective equipment : Wear self-contained breathing apparatus and protective suit.
for firefighters

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Wear personal protective equipment. Unprotected persons must be kept away.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.

Environmental precautions : Prevent further leakage or spillage if safe to do so.
Prevent product from entering drains.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses.

Methods and materials for containment and cleaning up : Ventilate the area.
No sparking tools should be used.
Use explosion-proof equipment.
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).

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SECTION 7. HANDLING AND STORAGE**Handling**

Precautions for safe handling : Wear personal protective equipment.
Use only in well-ventilated areas.
Keep container tightly closed.
Do not smoke.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion : Keep away from fire, sparks and heated surfaces.
Take precautionary measures against static discharges.
Ensure all equipment is electrically grounded before beginning transfer operations.
Use explosion-proof equipment.
Keep product and empty container away from heat and sources of ignition.
No sparking tools should be used.
No smoking.

Storage

Conditions for safe storage, including any incompatibilities : Store in area designed for storage of flammable liquids. Protect from physical damage.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep away from heat and sources of ignition.
Keep away from direct sunlight.
Store away from incompatible substances.
Container hazardous when empty.
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.
- Engineering measures : Use with local exhaust ventilation.
Prevent vapour buildup by providing adequate ventilation during and after use.
- Eye protection : Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
If splashes are likely to occur, wear:
Goggles or face shield, giving complete protection to eyes
- Hand protection : Solvent-resistant gloves
Gloves must be inspected prior to use.
Replace when worn.
- Skin and body protection : Wear as appropriate:
Solvent-resistant apron
Flame retardant antistatic protective clothing.
If splashes are likely to occur, wear:
Protective suit
- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
Use NIOSH approved respiratory protection.
- Hygiene measures : When using, do not eat, drink or smoke.
Wash hands before breaks and immediately after handling the product.
Keep working clothes separately.
Remove and wash contaminated clothing before re-use.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.

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Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
Diethyl ether	60-29-7	TWA : Time weighted average	(400 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values
Diethyl ether	60-29-7	STEL : Short term exposure limit	(500 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values
Diethyl ether	60-29-7	PEL : Permissible exposure limit	1,200 mg/m3 (400 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Diethyl ether	60-29-7	TWA : Time weighted average	1,200 mg/m3 (400 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Diethyl ether	60-29-7	STEL : Short term exposure limit	1,500 mg/m3 (500 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Ethanol	64-17-5	STEL : Short term exposure limit	(1,000 ppm)	2009	ACGIH:US. ACGIH Threshold Limit Values

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Ethanol	64-17-5	REL : Recomm ended exposure limit (REL):	1,900 mg/m ³ (1,000 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
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Ethanol	64-17-5	PEL : Permissi ble exposure limit	1,900 mg/m ³ (1,000 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
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Ethanol	64-17-5	TWA : Time weighted average	1,900 mg/m ³ (1,000 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid, clear
Color	: colourless
Odor	: sweet pungent
pH	: Note: Not applicable
Melting point/range	: -117.4 °C
Boiling point/boiling range	: 35 °C
Flash point	: -49 °F (-45 °C)
Evaporation rate	: 10 Method: Compared to Butyl acetate.

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Lower explosion limit	:	1.9 %(V)
Upper explosion limit	:	36 %(V)
Vapor pressure	:	589 hPa at 20 °C(68 °F) 717 hPa at 25 °C(77 °F)
Vapor density	:	2.6 Note: (Air = 1.0)
Density	:	0.713 g/cm ³ at 20 °C
Water solubility	:	68.9 g/l
Ignition temperature	:	160 °C
Decomposition temperature	:	Note: No decomposition if stored and applied as directed.
Molecular weight	:	74.12 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under recommended storage conditions.
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Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Heat, flames and sparks. Keep away from direct sunlight. Protect from exposure to air/oxygen (peroxide formation). Protect against light.
Incompatible materials	: Oxidizing agents Strong acids Halogens Sulphur compounds May attack many plastics, rubbers and coatings.
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Carbon monoxide Carbon dioxide (CO ₂) May form explosive peroxides.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: Acute toxicity estimate: 1,633 mg/kg Method: Calculation method
Acute inhalation toxicity Diethyl ether	: LC50: 97 mg/l 73000 ppm, vapour Exposure time: 4 h Species: Rat, male and female
Ethanol	: LC50: 20000 ppm Exposure time: 10 h Species: Rat
Acute dermal toxicity Diethyl ether	: LD50: > 20,000 mg/kg

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Species: Rabbit
Method: OECD Test Guideline 402

Skin irritation
Diethyl ether

: Species: Rabbit
Result: No skin irritation
Method: OECD Test Guideline 404

Ethanol

: Species: Rabbit
Result: Irritating to skin.
Exposure time: 24 h

Eye irritation
Diethyl ether

: Species: Rabbit
Result: slight irritation
Method: OECD Test Guideline 405

Ethanol

: Species: Rabbit
Result: Irritating to eyes.
Exposure time: 24 h

Diethyl ether

: Test Method: Ames test
Metabolic activation: with and without metabolic activation
Result: negative

Further information

: Note: Solvent vapours have a narcotic effect if inhaled in high concentrations.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity to fish
Diethyl ether

: LC50: 2,560 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)

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Ethanol : LC0: 8,140 mg/l
Exposure time: 48 h
Species: *Leuciscus idus* (Golden orfe)

flow-through test
LC50: 12,900 mg/l
Exposure time: 96 h
Species: *Oncorhynchus mykiss* (rainbow trout)

LC50: 14,200 mg/l
Exposure time: 96 h
Species: *Pimephales promelas* (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates
Ethanol : EC50: 9,268 mg/l
Exposure time: 48 h
Species: *Daphnia magna* (Water flea)

EC50: 10,800 mg/l
Exposure time: 24 h
Species: *Daphnia magna* (Water flea)

Toxicity to algae
Ethanol : LC0: 5,000 mg/l
Species: *Scenedesmus quadricauda* (Green algae)

Toxicity to bacteria
Ethanol : LC0: 6,500 mg/l
Species: *Pseudomonas putida*

EC50: 35,470 mg/l
Exposure time: 5 min
Species: *Photobacterium phosphoreum*

EC50: 34,634 mg/l
Exposure time: 30 min
Species: *Photobacterium phosphoreum*

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Further information on ecology**SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal methods : Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT UN/ID No. : UN 1155
Proper shipping name : Diethyl ether
Class : 3
Packing group : I
Hazard Labels : 3

IATA UN/ID No. : UN 1155
Description of the goods : Diethyl ether
Class : 3
Packaging group : I
Hazard Labels : 3
Packing instruction (cargo aircraft) : 361
Packing instruction (passenger aircraft) : 351

IMDG UN/ID No. : UN 1155
Description of the goods : Diethyl ether
Class : 3
Packaging group : I
Hazard Labels : 3
EmS Number : F-E, S-D
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION**Inventories**

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US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL) : All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI) : On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances : On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand : On the inventory, or in compliance with the inventory

National regulatory information

US. Drug Enforcement Administration (DEA) Listed Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2)) : Listed

US. EPA CERCLA : Diethyl ether 60-29-7
: The following component(s) of this product is/are subject to

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Hazardous Substances (40 CFR 302) : release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ):


Reportable quantity: 100 lbs
: Diethyl ether 60-29-7

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

SARA 313 Components : 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
Reactivity Hazard

CERCLA Reportable Quantity : 102 lbs

California Prop. 65 :  **WARNING:** This product can expose you to chemicals, listed below, known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ethanol 64-17-5
Ethanol 64-17-5

Massachusetts RTK : Diethyl ether 60-29-7
: Ethanol 64-17-5

New Jersey RTK : Diethyl ether 60-29-7
: Ethanol 64-17-5

Pennsylvania RTK : Diethyl ether 60-29-7
: Ethanol 64-17-5

SECTION 16. OTHER INFORMATION

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	HMIS III	NFPA
Health hazard	: 2	1
Flammability	: 4	4
Physical Hazard	: 2	
Instability	:	1

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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