

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Ethyl Ether

MSDS Number : 000000011366

Product Use Description : Solvent

Manufacturer or supplier's details : Honeywell International Inc.
115 Tabor Road
Morris Plains, NJ 07950-2546

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

Classification of the substance or mixture

Classification of the substance or mixture : Flammable liquids, Category 1
Acute toxicity, Category 4, Oral
Eye irritation, Category 2A
Specific target organ toxicity - single exposure, Category 3,
Central nervous system

106-4 ETHYL ETHER PRES

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GHS Label elements, including precautionary statements

Symbol(s)



Signal word

: Danger

Hazard statements

: Extremely flammable liquid and vapour.
Harmful if swallowed.
Causes serious eye irritation.
May cause drowsiness and 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/ eye protection/ face protection.**Response:**IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER or doctor/ physician if you feel unwell.
Rinse mouth.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

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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 %

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,

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

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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

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Wear personal protective equipment. Unprotected persons must be kept away.

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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 for 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).

SECTION 7. HANDLING AND STORAGE**Handling**

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.

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

Storage

Requirements for storage areas and containers : 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.

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

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
Diethyl ether	60-29-7	STEL : Short term exposure limit	(500 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values
Diethyl ether	60-29-7	TWA : time weighted average	(400 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	STEL : Short term exposure limit	1,500 mg/m3 (500 ppm)	1989	Z1A:US. OSHA Table Z-1-A (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)

SAFETY DATA SHEET

Honeywell

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

Ethanol	64-17-5	STEL : Short term exposure limit	(1,000 ppm)	2009	ACGIH:US. ACGIH Threshold Limit Values
Ethanol	64-17-5	REL : Recomm ended exposure limit (REL):	1,900 mg/m3 (1,000 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Ethanol	64-17-5	PEL : Permissi ble exposure limit	1,900 mg/m3 (1,000 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Ethanol	64-17-5	TWA : time weighted average	1,900 mg/m3 (1,000 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid, clear
Color	: colourless
Odor	: sweet pungent
pH	: Note: not applicable
Melting point/freezing point	: -117.4 °C
Boiling point/boiling range	: 35 °C
Flash point	: -49 °F (-45 °C)

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

Evaporation rate : 10
Method: Compared to Butyl acetate.

Lower explosion limit : 1 %(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/cm³ at 20 °C

Water solubility : 68.9 g/l

Ignition temperature : 160 °C

Molecular weight : 74.12 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Hazardous polymerisation does not occur.

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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 to avoid	: 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 Diethyl ether	: LD50: 1,215 mg/kg Species: rat
Ethanol	: LD50: 7,060 mg/kg Species: rat
Acute inhalation toxicity Diethyl ether	: LC50: 73000 ppm Exposure time: 2 h Species: rat
Ethanol	: LC50: 20000 ppm Exposure time: 10 h Species: rat
Acute dermal toxicity Diethyl ether	: LD50: > 14.26 g/kg Species: rabbit

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

Skin irritation

Diethyl ether

: Species: rabbit
Note: slight irritation

Ethanol

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

Eye irritation

Diethyl ether

: Species: rabbit eye
Note: Irritating to eyes.

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)

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)

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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

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

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

SECTION 14. TRANSPORT INFORMATION

SAFETY DATA SHEET

Honeywell

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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

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

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

Korea. Toxic Chemical Control Law (TCCL) List : 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 Hazardous Substances (40 CFR 302) : Diethyl ether 60-29-7
: The following component(s) of this product is/are subject to 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 : 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
Reactivity Hazard

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

CERCLA Reportable Quantity : 102 lbs

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer.
Ethanol 64-17-5

: WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
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

WHMIS Classification : B2: Flammable liquid
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

	HMIS III	NFPA
Health hazard	: 2	1
Flammability	: 4	4

106-4 ETHYL ETHER PRES

000000011366

Version 1.5

Revision Date 05/28/2014

Print Date 02/25/2016

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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