

**Diethyl ether****32203-1L**

Version 1.3

Issuing date

Revision Date 11/02/2017

Print Date 06/28/2019

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****Product information**

Trade name : Diethyl ether

Number : 000000020233

Recommended use of the chemical and restrictions on use : Laboratory chemicals

Manufacturer or supplier's details : Honeywell Specialty Chemicals Seelze GmbH  
Wunstorfer Straße 40  
Seelze, 30926


For further information, please contact: : 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**  
: **In Japan: +(81)-345209637**  
: (24 hours/day, 7 days/week)

**2. HAZARDS IDENTIFICATION****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

**GHS Label elements, including precautionary statements**

Symbol(s) : 

Signal word : Danger

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

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- 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 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.
- Other hazards which do not result in classification : May form explosive peroxides.  
 Repeated exposure may cause skin dryness or cracking.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**Formula : C<sub>4</sub>H<sub>10</sub>O

Chemical nature : Substance

Chemical name	CAS-No.	Concentration
Diethyl ether	60-29-7	<=100.00 %
Diethyl ether		

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**4. FIRST AID MEASURES**

- General advice : First aider needs to protect himself.  
Move out of dangerous area.  
Immediately take off contaminated clothing and rinse body with plenty of water.
- Inhalation : In case of accident by inhalation: remove casualty to fresh air and keep at rest.  
Consult a physician.
- Skin contact : After contact with skin, wash immediately with plenty of water.  
Call a physician if irritation develops or persists.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids.  
Protect unharmed eye.  
Call a physician immediately.
- Ingestion : When swallowed, allow water to be drunk.  
Call a physician immediately.

**5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Water spray  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder
- Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.
- Specific hazards during firefighting : Extremely flammable liquid and vapor. Vapor may cause flash fire.  
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.  
In case of fire hazardous decomposition products may be produced such as:  
carbon oxides (CO, CO<sub>2</sub>).
- Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.  
No unprotected exposed skin areas.
- Further information : Use water spray to cool unopened containers.

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**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.  
Wear personal protective equipment. Unprotected persons must be kept away.  
Remove all sources of ignition.  
Ensure adequate ventilation.  
Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.

Environmental precautions : Do not flush into surface water or sanitary sewer system.  
Prevent further leakage or spillage if safe to do so.  
The product evaporates readily.

Methods and materials for containment and cleaning up : Ventilate the area.  
No sparking tools should be used.  
Use explosion-proof equipment.  
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**7. HANDLING AND STORAGE****Handling**

Precautions for safe handling : Wear personal protective equipment.  
Use only in well-ventilated areas.  
Use only in an area containing explosion proof equipment.

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.  
Store in original container.  
Keep containers tightly closed in a dry, cool and well-ventilated place.  
Protect from exposure to air/oxygen (peroxide formation).  
Store in a place accessible by authorized persons only.

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

Components	CAS-No.	Value	Control parameters	Update	Basis
Diethyl ether Diethyl ether	60-29-7	TL : Threshold limits	(400 ppm)	08 2006	ISHL:Industrial Safety and Health Law OEL
		TWA : Time weighted average	1,200 mg/m3 (400 ppm)	04 2007	Japan Society for Occupational Health:Japan Society for Occupational Health allowable concentration recommendation value

**Appropriate engineering controls**

Use with local exhaust ventilation.

Prevent vapour buildup by providing adequate ventilation during and after use.

Electrical equipment should be protected to the appropriate standard.

**Individual protection measures, such as personal protective equipment**

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection : Impervious gloves  
Gloves must be inspected prior to use.  
Replace when worn.

Eye protection : Safety goggles

Skin and body protection : Flame retardant antistatic protective clothing.

Hygiene measures : Separate rooms are required for washing, showering and changing clothes.  
Take off all contaminated clothing immediately.  
Recommended preventive skin protection  
General industrial hygiene practice.

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Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.  
Legal requirements are to be considered in regard of the selection, use and care of personal protective equipment.  
Do not breathe vapours or spray mist.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical state : liquid

Colour : colourless

Odour : characteristic

pH : Note: Not applicable

Melting point/range : -116 °C at 1,013 hPa

Boiling point/boiling range : 34 - 35 °C at 1,013 hPa

Flash point : -49 °F (-45 °C) at 1,013 hPa  
Method: closed cup

Lower explosion limit : 1.7 %(V)

Upper explosion limit : 48 %(V)

Vapour pressure : 587 hPa  
at 20 °C(68 °F)  
  
716 hPa  
at 25 °C(77 °F)

Density : 0.71 g/cm<sup>3</sup> at 20 °C

Water solubility : 64.9 g/l at 20 °C

Solubility in other solvents : Note: Soluble in most organic solvents

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Partition coefficient: n-  
octanol/water : log Pow: 1.05 at 20 °C

Ignition temperature : 170 °C

Auto-ignition temperature : 174.85 °C at 1,013 hPa

Viscosity, dynamic : 0.24 mPa.s at 20 °C

Molecular weight : 74.12 g/mol

**10. STABILITY AND REACTIVITY**

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous  
reactions : Reacts with air to form peroxides.  
Vapours may form explosive mixture with air.

Conditions to avoid : Heat, flames and sparks.  
Extremes of temperature and direct sunlight.  
Exposure to air.

Incompatible materials to  
avoid : Oxidizing agents  
Strong acids  
  
Oxidizing solids  
Oxidizing liquids  
Water reactive  
Spontaneous combustion

Hazardous decomposition  
products : In case of fire hazardous decomposition products may be  
produced such as:  
carbon oxides (CO, CO<sub>2</sub>).

**11. TOXICOLOGICAL INFORMATION**

Acute oral toxicity : LD50: 1,600 mg/kg  
Species: Rat, male and female  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50: 97 mg/l , vapour

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	Exposure time: 4 h Species: Rat, male and female
Acute dermal toxicity	: LD50: > 20,000 mg/kg Species: Rabbit Method: OECD Test Guideline 402
Skin irritation	: Species: Rabbit Result: No skin irritation Method: OECD Test Guideline 404
Eye irritation	: Species: Rabbit Result: slight irritation Method: OECD Test Guideline 405
Sensitisation	: Species: Mouse Result: non-sensitizing Method: OECD Test Guideline 429
Genotoxicity in vitro	: Test Method: Ames test Metabolic activation: with and without metabolic activation Result: negative
Aspiration toxicity	: Not classified due to data which are conclusive although insufficient for classification.
Further information Diethyl ether	: Note: Solvent vapours have a narcotic effect if inhaled in high concentrations.

**12. ECOLOGICAL INFORMATION****Toxicity**

Toxicity to fish	: static test LC50: > 100 mg/l Species: Leuciscus idus (Golden orfe)
Toxicity to daphnia and other aquatic invertebrates	: static test EC50: > 100 mg/l



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Exposure time: 48 h  
Species: Daphnia magna (Water flea)

Toxicity to algae : ErC50: > 100 mg/l  
Species: Desmodesmus subspicatus (Scenedesmus subspicatus)  
Method: OECD Test Guideline 201

Toxicity to bacteria : Note: no data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LC50: 100 mg/l  
End point: Reproduction Test  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211

**Persistence and degradability**

Biodegradability : aerobic  
Result: rapidly biodegradable

**Bioaccumulative potential**

Bioaccumulation : Note: No bioaccumulation is to be expected (log Pow <= 4).

**Other adverse effects**

Additional ecological information : Bioaccumulation is unlikely.  
Do not flush into surface water or sanitary sewer system.

**13. DISPOSAL CONSIDERATIONS**

WDPCL Waste Disposal and Public Cleansing Law : Specially Controlled Industrial Waste

Disposal methods : In accordance with local and national regulations.

**14. TRANSPORT INFORMATION**

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**ADR**

UN/ID No. : UN 1155  
 Description of the goods : DIETHYL ETHER  
 Class : 3  
 Packing group : I  
 Classification Code : F1  
 Hazard Identification Number : 33  
 Labels : 3

**IATA**

UN/ID No. : UN 1155  
 Description of the goods : Diethyl ether  
 Class : 3  
 Packing group : I  
 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  
 Packing group : I  
 Labels : 3  
 EmS Number 1 : F-E  
 EmS Number 2 : S-D  
  
 Marine pollutant : no

**15. REGULATORY INFORMATION**
**National regulatory information**

Vessel Safety Law : Flammable liquids (Article 2 and 3 of rules on shipping and storage of dangerous goods and its Attached Table 1)  
 JP VSL

Aviation Law : Flammable liquid (Article 194 of The Enforcement Rules of Aviation Law and its Attached Table 1)  
 JP AVL

Substances Subject to be :  
 Notified Names : Threshold Concentration: 0.1 % wt 65  
 JP MSDSD

Substances Subject to be : Article 18  
 Indicated Names : Threshold limits: 1 % wt 2.7  
 JPISHL LR

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Fire Service Law : Group 4 Flammable liquids  
Special flammables  
Hazardous rank I  
Water insoluble  
Keep away from fire

Poisonous and Deleterious  
Substances Control Law : Not relevant

**Other international regulations****Notification status**

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

Japan. Industrial Safety &  
Health Law (ISHL) 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

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**16. OTHER INFORMATION**

	<b>HMIS III</b>	<b>NFPA</b>
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.

Previous Issue Date: 10/13/2017

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