

## SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended

### Diethyl ether

Creation date	24th April 2016	Version	6.0
Revision date	04th January 2024		

#### SECTION 1: Identification of the substance/mixture and of the company/undertaking

##### 1.1. Product identifier

Substance / mixture	Diethyl ether
Chemical name	substance
CAS number	diethyl ether
Index number	60-29-7
EC (EINECS) number	603-022-00-4
Registration number	200-467-2
Other substance name	01-2119535785-29-0001
	Ethyl ether

##### 1.2. Relevant identified uses of the substance or mixture and uses advised against

###### Substance's intended use

Chemical production, analytical chemistry, laboratory synthesis, industrial applications.

###### Substance uses advised against

The product should not be used in ways other than those referred in Section 1.

##### 1.3. Details of the supplier of the safety data sheet

###### Supplier

Name or trade name	Ing. Petr Švec - PENTA s.r.o.
Address	Radiová 1122/1, Praha 10, 102 00 Czech Republic
Identification number (CRN)	02096013
VAT Reg No	CZ02096013
Phone	+420 226 060 681
E-mail	info@pentachemicals.eu
Web address	www.pentachemicals.eu

###### Competent person responsible for the safety data sheet

Name	Ing. Petr Švec - PENTA s.r.o.
E-mail	info@pentachemicals.eu

##### 1.4. Emergency telephone number

European emergency number: 112 112

#### SECTION 2: Hazards identification

##### 2.1. Classification of the substance or mixture

###### Classification of the substance in accordance with Regulation (EC) No 1272/2008

The substance is classified as dangerous.

Flam. Liq. 1, H224  
Acute Tox. 4, H302  
STOT SE 3, H336

###### Most serious adverse physico-chemical effects

Extremely flammable liquid and vapour.

###### Most serious adverse effects on human health and the environment

Harmful if swallowed. May cause drowsiness or dizziness.

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#### 2.2. Label elements

##### Hazard pictogram



##### Signal word

Danger

##### Dangerous substance

diethyl ether

(Index: 603-022-00-4; CAS: 60-29-7)

##### Hazard statements

H224	Extremely flammable liquid and vapour.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.

##### Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take action to prevent static discharges.
P403+P235	Store in a well-ventilated place. Keep cool.

##### Supplemental information

EUH019	May form explosive peroxides.
EUH066	Repeated exposure may cause skin dryness or cracking.

#### 2.3. Other hazards

The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605. Substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No. 1907/2006 (REACH) as amended.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

##### Chemical characterization

The substance specified below.

Identification numbers	Substance name	Content in % weight	Classification according to Regulation (EC) No 1272/2008	Note
Index: 603-022-00-4 CAS: 60-29-7 EC: 200-467-2 Registration number: 01-2119535785-29-0001	<b>substance main component</b> diethyl ether	≥99	Flam. Liq. 1, H224 Acute Tox. 4, H302 STOT SE 3, H336 EUH019 EUH066	1

##### Notes

1 A substance for which exposure limits are set.

Full text of all classifications and hazard statements is given in the section 16.

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#### SECTION 4: First aid measures

##### 4.1. Description of first aid measures

Take care of your own safety. If any health problems are manifested or if in doubt, inform a doctor and show him information from this safety data sheet. If unconscious, put the person in the stabilized (recovery) position on his side with his head slightly bent backwards and make sure that airways are free; never induce vomiting. If the person vomits by himself, make sure that the vomit is not inhaled. In life threatening conditions first of all provide resuscitation of the affected person and ensure medical assistance. Respiratory arrest - provide artificial respiration immediately. Cardiac arrest - provide indirect cardiac massage immediately.

##### If inhaled

Terminate the exposure immediately; move the affected person to fresh air. Protect the person against growing cold. Provide medical treatment if irritation, dyspnoea or other symptoms persist.

##### If on skin

Remove contaminated clothes. Wash the affected area with plenty of water, lukewarm if possible. Soap, soap solution or shampoo should be used if there is no skin injury. Provide medical treatment if skin irritation persists. Rinse skin with water or shower.

##### If in eyes

Rinse eyes immediately with a flow of running water, open the eyelids (also using force if needed); remove contact lenses immediately if worn by the affected person. Rinsing should continue at least for 10 minutes.

##### If swallowed

Rinse out the mouth with water and provide 2-5 dL of water. Provide medical treatment.

##### 4.2. Most important symptoms and effects, both acute and delayed

##### If inhaled

May cause drowsiness or dizziness.

##### If on skin

Not expected.

##### If in eyes

Not expected.

##### If swallowed

Irritation, nausea.

##### 4.3. Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

#### SECTION 5: Firefighting measures

##### 5.1. Extinguishing media

##### Suitable extinguishing media

Alcohol-resistant foam, carbon dioxide, powder, water spray jet, water mist.

##### Unsuitable extinguishing media

Water - full jet.

##### 5.2. Special hazards arising from the substance or mixture

In the event of fire, carbon monoxide, carbon dioxide and other toxic gases may arise. Inhalation of hazardous degradation (pyrolysis) products may cause serious health damage.

##### 5.3. Advice for firefighters

Self-Contained Breathing Apparatus (SCBA) with a chemical protection suit only where personal (close) contact is likely. Use a self-contained breathing apparatus and full-body protective clothing. Closed containers with the product near the fire should be cooled with water. Do not allow run-off of contaminated fire extinguishing material to enter drains or surface and ground water.

#### SECTION 6: Accidental release measures

##### 6.1. Personal precautions, protective equipment and emergency procedures

Provide sufficient ventilation. The substance is flammable. Remove all ignition sources. Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Do not inhale mist/vapours/spray. Prevent contact with skin and eyes.

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#### 6.2. Environmental precautions

Prevent contamination of the soil and entering surface or ground water.

#### 6.3. Methods and material for containment and cleaning up

Spilled product should be covered with suitable (non-flammable) absorbing material (sand, diatomaceous earth, earth and other suitable absorption materials); to be contained in well closed containers and removed as per the Section 13. In the event of leakage of the substantial amount of the product, inform fire brigade and other competent bodies. After removal of the product, wash the contaminated site with plenty of water. Do not use solvents.

#### 6.4. Reference to other sections

See the Section 7, 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Prevent formation of gases and vapours in flammable or explosive concentrations and concentrations exceeding the occupational exposure limits. The product should be used only in the areas where it is not in contact with open fire and other ignition sources. Use non-sparking tools. Use of antistatic clothes and footwear is recommended. Do not inhale mist/vapours/spray. Prevent contact with skin and eyes. No smoking. Wash hands and exposed parts of the body thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Use personal protective equipment as per Section 8. Observe valid legal regulations on safety and health protection. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Take action to prevent static discharges.

#### 7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in cold, dry and well ventilated areas designated for this purpose. Do not expose to sunlight. Store locked up. Keep container tightly closed. Keep cool. Recommended storage temperature max. 15 ° C.

Storage class

3A - Flammable liquids (flash point below 55 °C)

#### The specific requirements or rules relating to the substance/mixture

Solvent vapours are heavier than air and accumulate especially near the floor where they may form an explosive mixture with the air.

#### 7.3. Specific end use(s)

not available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### European Union

##### Commission Directive 2000/39/EC

Substance name (component)	Type	Value
diethyl ether (CAS: 60-29-7)	OEL 8 hours	308 mg/m <sup>3</sup>
	OEL 8 hours	100 ppm
	OEL 15 minutes	616 mg/m <sup>3</sup>
	OEL 15 minutes	200 ppm

#### 8.2. Exposure controls

Follow the usual measures intended for health protection at work and especially for good ventilation. This can be achieved only by local suction or efficient general ventilation. If exposure limits cannot be observed in this mode, suitable protection of airways must be used. Do not eat, drink and smoke during work. Wash your hands thoroughly with water and soap after work and before breaks for a meal and rest.

##### Eye/face protection

Safety glasses or protective shield.

##### Skin protection

Hand protection: Protective gloves (Viton). When choosing appropriate thickness, material and permeability of the gloves, observe recommendations of their particular manufacturer. Suitable protective clothing and footwear - antistatic treatment. Contaminated skin should be washed thoroughly.

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#### Respiratory protection

Halfmask with a filter against organic vapours or a self-contained breathing apparatus as appropriate if exposure limit values of substances are exceeded or in a poorly ventilated environment.

#### Thermal hazard

Not available.

#### Environmental exposure controls

Observe usual measures for protection of the environment, see Section 6.2.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless
Odour	sweet
Odour threshold	1 mg/m <sup>3</sup> - 27 mg/m <sup>3</sup>
Melting point/freezing point	-117.6 °C
Boiling point or initial boiling point and boiling range	34.5 °C
Flammability	Extremely flammable liquid and vapour.
Lower and upper explosion limit	
bottom	1.9 %
upper	36 %
Flash point	-45 °C
Auto-ignition temperature	data not available
Decomposition temperature	data not available
pH	data not available
Kinematic viscosity	data not available
Solubility in water	data not available
Solubility in fats	data not available
Partition coefficient n-octanol/water (log value)	0.89
Vapour pressure	56.3 kPa at 20 °C
Density and/or relative density	
Density	0.71 g/cm <sup>3</sup>
Relative density	data not available
Relative vapour density	data not available
Particle characteristics	data not available

#### 9.2. Other information

Evaporation rate	data not available
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### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

The substance is extremely flammable.

#### 10.2. Chemical stability

The product is stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

Unknown.

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**10.4. Conditions to avoid**

The product is stable and no degradation occurs under normal use. Protect against flames, sparks, overheating and against frost.

**10.5. Incompatible materials**

Protect against strong acids, bases and oxidizing agents.

**10.6. Hazardous decomposition products**

Not developed under normal uses. Dangerous outcomes such as carbon monoxide and carbon dioxide are formed at high temperature and in fire.

**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Inhalation of solvent vapors above values exceeding exposure limits for working environment may result in acute inhalation poisoning, depending on the level of concentration and exposure time. No toxicological data is available for the substance.

**Acute toxicity**

Harmful if swallowed.

Diethyl ether					
Route of exposure	Parameter	Value	Exposure time	Species	Sex
Dermal	LD <sub>50</sub>	>2000 mg/kg		Rabbit	
Oral	LD <sub>50</sub>	1211 mg/kg		Rat (Rattus norvegicus)	
Inhalation	LC <sub>50</sub>	31000 ppm	30 minutes	Mouse	

diethyl ether					
Route of exposure	Parameter	Value	Exposure time	Species	Sex
Oral	LD <sub>50</sub>	1211 mg/kg		Rat (Rattus norvegicus)	
Dermal	LD <sub>50</sub>	>2000 mg/kg		Rabbit	
Inhalation (vapor)	LC <sub>50</sub>	31000 ppm	30 minutes	Mouse	

**Skin corrosion/irritation**

Based on available data the classification criteria are not met.

**Serious eye damage/irritation**

Based on available data the classification criteria are not met.

**Respiratory or skin sensitisation**

Based on available data the classification criteria are not met.

**Germ cell mutagenicity**

Based on available data the classification criteria are not met.

**Carcinogenicity**

Based on available data the classification criteria are not met.

**Reproductive toxicity**

Based on available data the classification criteria are not met.

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**Toxicity for specific target organ - single exposure**

May cause drowsiness or dizziness.

**Toxicity for specific target organ - repeated exposure**

Based on available data the classification criteria are not met.

**Aspiration hazard**

Based on available data the classification criteria are not met.

**11.2. Information on other hazards**

The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

**SECTION 12: Ecological information**

**12.1. Toxicity**

not available

**Acute toxicity**

Diethyl ether				
Parameter	Value	Exposure time	Species	Environment
LC <sub>50</sub>	2560 mg/l	96 hours	Fish (Pimephales promelas)	
EC <sub>50</sub>	165 mg/l	24 hours	Daphnia (Daphnia magna)	
IC <sub>50</sub>	>100 mg/l	72 hours	Algae (Selenastrum capricornutum)	

diethyl ether				
Parameter	Value	Exposure time	Species	Environment
LC <sub>50</sub>	2560 mg/l	96 hours	Fish	
EC <sub>50</sub>	165 mg/l	24 hours	Daphnia (Daphnia magna)	
IC <sub>50</sub>	>100 mg/l	72 hours	Algae	

**Chronic toxicity**

Diethyl ether				
Parameter	Value	Exposure time	Species	Environment
	>100 mg/l	21 days	Daphnia (Daphnia magna)	

diethyl ether				
Parameter	Value	Exposure time	Species	Environment
	>100 mg/l	21 days	Daphnia (Daphnia magna)	

**12.2. Persistence and degradability**

not available

**12.3. Bioaccumulative potential**

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Not available.

**12.4. Mobility in soil**

Not available.

**12.5. Results of PBT and vPvB assessment**

Product does not contain any substance meeting the criteria for PBT or vPvB in accordance with the Annex XIII of Regulation (EC) No 1907/2006 (REACH) as amended.

**12.6. Endocrine disrupting properties**

This substance does not have endocrine disrupting properties with respect to non-target organisms as it does not meet the criteria set out in section B of Regulation (EU) No 2017/2100.

**12.7. Other adverse effects**

Not available.

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

Hazard of environmental contamination; dispose of the waste in accordance with the local and/or national regulations. Proceed in accordance with valid regulations on waste disposal. Any unused product and contaminated packaging should be put in labelled containers for waste collection and submitted for disposal to a person authorised for waste removal (a specialized company) that is entitled for such activity. Do not empty unused product in drainage systems. The product must not be disposed of with municipal waste. Empty containers may be used at waste incinerators to produce energy or deposited in a dump with appropriate classification. Perfectly cleaned containers can be submitted for recycling.

**Waste management legislation**

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, as amended. Decision 2000/532/EC establishing a list of wastes, as amended.

**SECTION 14: Transport information**

**14.1. UN number or ID number**

UN 1155

**14.2. UN proper shipping name**

DIETHYL ETHER

**14.3. Transport hazard class(es)**

3 Flammable liquids

**14.4. Packing group**

I

**14.5. Environmental hazards**

not relevant

**14.6. Special precautions for user**

Reference in the Sections 4 to 8.

**14.7. Maritime transport in bulk according to IMO instruments**

not relevant

**Additional information**

Hazard identification No.

33

UN number

1155

Classification code

F1

Safety signs

3





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Tunnel restriction code (D/E)

**Air transport - ICAO/IATA**

Packaging instructions passenger 351  
Cargo packaging instructions 361

**Marine transport - IMDG**

EmS (emergency plan) F-E, S-D  
MFAG 330

**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing the European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended. REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

**15.2. Chemical safety assessment**

A Chemical Safety Assessment has been carried out.

**SECTION 16: Other information**

**A list of standard risk phrases used in the safety data sheet**

H224 Extremely flammable liquid and vapour.  
H302 Harmful if swallowed.  
H336 May cause drowsiness or dizziness.

**Guidelines for safe handling used in the safety data sheet**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P243 Take action to prevent static discharges.  
P403+P235 Store in a well-ventilated place. Keep cool.

**A list of additional standard phrases used in the safety data sheet**

EUH019 May form explosive peroxides.  
EUH066 Repeated exposure may cause skin dryness or cracking.

**Other important information about human health protection**

The product must not be - unless specifically approved by the manufacturer/importer - used for purposes other than as per the Section 1. The user is responsible for adherence to all related health protection regulations.

**Key to abbreviations and acronyms used in the safety data sheet**

ADR European agreement concerning the international carriage of dangerous goods by road  
BCF Bioconcentration Factor  
CAS Chemical Abstracts Service  
CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substance and mixtures  
EC Identification code for each substance listed in EINECS  
EC<sub>50</sub> Concentration of a substance when it is affected 50% of the population  
EINECS European Inventory of Existing Commercial Chemical Substances  
EmS Emergency plan  
EU European Union  
EuPCS European Product Categorisation System  
IATA International Air Transport Association

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IBC	International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals
IC <sub>50</sub>	Concentration causing 50% blockade
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
INCI	International Nomenclature of Cosmetic Ingredients
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC <sub>50</sub>	Lethal concentration of a substance in which it can be expected death of 50% of the population
LD <sub>50</sub>	Lethal dose of a substance in which it can be expected death of 50% of the population
log K <sub>ow</sub>	Octanol-water partition coefficient
OEL	Occupational Exposure Limits
PBT	Persistent, Bioaccumulative and Toxic
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Agreement on the transport of dangerous goods by rail
UN	Four-figure identification number of the substance or article taken from the UN Model Regulations
UVCB	Substances of unknown or variable composition, complex reaction products or biological materials
VOC	Volatile organic compounds
vPvB	Very Persistent and very Bioaccumulative
Acute Tox.	Acute toxicity
Flam. Liq.	Flammable liquid
STOT SE	Specific target organ toxicity - single exposure

#### Training guidelines

Inform the personnel about the recommended ways of use, mandatory protective equipment, first aid and prohibited ways of handling the product.

#### Recommended restrictions of use

not available

#### Information about data sources used to compile the Safety Data Sheet

REGULATION (EC) No. 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (REACH) as amended.  
REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Data from the manufacturer of the substance / mixture, if available - information from registration dossiers.

#### The changes (which information has been added, deleted or modified)

The version 6.0 replaces the SDS version from 14 March 2023. Changes were made in sections 2, 11 and 16.

#### More information

Classification procedure - calculation method.

#### Statement

The safety data sheet provides information aimed at ensuring safety and health protection at work and environmental protection. The provided information corresponds to the current status of knowledge and experience and complies with valid legal regulations. The information should not be understood as guaranteeing the suitability and usability of the product for a particular application.