

**Safety data sheet**  
according to 1907/2006/EC, Article 31

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

· **1.1 Product identifier**

· **Trade name:** Diethyl ether

· **Article number:** 2770

· **CAS Number:**  
60-29-7

· **EC number:**  
200-467-2

· **Index number:**  
603-022-00-4

· **Application of the substance / the mixture**

Biochemistry  
Chemical analytics  
Laboratory chemicals

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

PANREAC QUIMICA S.L.U.  
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Polígono Pla de la Bruguera  
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· **Further information obtainable from:** email: [product.safety@panreac.com](mailto:product.safety@panreac.com)

· **1.4 Emergency telephone number:**

Single telephone number for emergency calls: 112 (EU)  
Tel.: (+34) 937 489 499

**SECTION 2: Hazards identification**

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**

Flam. Liq. 1 H224 Extremely flammable liquid and vapour.

Acute Tox. 4 H302 Harmful if swallowed.

STOT SE 3 H336 May cause drowsiness or dizziness.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

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· **Hazard pictograms**



GHS02 GHS07

· **Signal word** Danger

· **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.
- P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Additional information:**

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

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

· **3.1 Substances**

· **CAS No. Description**

60-29-7 Diethyl ether

· **Identification number(s)**

· **EC number:** 200-467-2

· **Index number:** 603-022-00-4

### SECTION 4: First aid measures

· **4.1 Description of first aid measures**

· **General information:**

Position and transport stably in side position.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Involve doctor immediately.

· **After inhalation:**

Supply fresh air.

If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

Seek immediate medical advice.

· **After skin contact:**

Call a doctor immediately.

Wash off with plenty of water.

Immediately rinse with water.

Immediately remove any clothing soiled by the product.

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- **After eye contact:**  
Rinse opened eye for several minutes under running water.  
Seek medical treatment.
- **After swallowing:**  
Do not induce vomiting; call for medical help immediately.  
Risk of aspiration!  
make victim drink water (maximum of 2 drinking glasses)
- **4.2 Most important symptoms and effects, both acute and delayed** Dizziness
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

## SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
Water spray  
Foam  
CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**  
In case of fire, the following can be released:  
Carbon monoxide and carbon dioxide  
Combustible.  
Forms explosive mixtures with air at ambient temperatures.  
Vapours are heavier than air and may spread along floors.  
Beware of backfiring.
- **5.3 Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.  
Wear fully protective suit.
- **Additional information**  
Cool endangered receptacles with water spray.  
Collect contaminated fire fighting water separately. It must not enter the sewage system.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.  
Contain escaping vapours with water.

## SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
Keep away from ignition sources.  
Avoid substance contact.  
Do not inhale steams/aerosols.
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents  
Clean up affected area.
- **6.4 Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

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## SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
 Use only in well ventilated areas.  
 Ensure good ventilation/exhaustion at the workplace.  
 Open and handle receptacle with care.  
 Prevent formation of aerosols.  
 Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
- **Information about fire - and explosion protection:**  
 Fumes can combine with air to form an explosive mixture.  
 Use only in explosion protected area.  
 Keep ignition sources away - Do not smoke.  
 Protect from heat.  
 Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:**  
 Store away from oxidising agents.  
 Away from sources of ignition and heat.
- **Further information about storage conditions:**  
 Keep container tightly sealed.  
 Do not seal receptacle gas tight.  
 Store in cool, dry conditions in well sealed receptacles.  
 Protect from heat and direct sunlight.  
 Open receptacle only under localised extractor facilities.  
 Store receptacle in a well ventilated area.  
 Store only outside or in explosion proof rooms.  
 Avoid contact with air / oxygen (formation of peroxide).  
 Store under lock and key and with access restricted to technical experts or their assistants only.  
 Accesible for authorised persons only.
- **Recommended storage temperature:** < 15°C
- **Storage class:** 3
- **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

### · 8.1 Control parameters

#### · Ingredients with limit values that require monitoring at the workplace:

##### 60-29-7 Diethyl ether

WEL	Short-term value: 620 mg/m <sup>3</sup> , 200 ppm Long-term value: 310 mg/m <sup>3</sup> , 100 ppm
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#### · DNELs

Oral	Long-term - systemic effects, general population	15.6 mg/kg
Dermal	Long-term - systemic effects, worker	44 mg/kg
	Long term - systemic effects, general population	15.6 mg/kg
Inhalative	Acute - systemic effects, worker	616 mg/m <sup>3</sup>
	Long-term - systemic effects, worker	308 mg/m <sup>3</sup>
	Long-term - systemic effects, general population	54.5 mg/m <sup>3</sup>

#### · PNECs


Aquatic compartment - freshwater	2 mg/L
Aquatic compartment - marine water	0.2 mg/L
Aquatic compartment - sediment in freshwater	9.14 mg/kg
Aquatic compartment - sediment in marine water	0.914 mg/kg

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Terrestrial compartment - soil	0.66 mg/kg
Sewage treatment plant	4.2 mg/L

- **Additional information:** The lists valid during the making were used as basis.
- **8.2 Exposure controls**
- **Appropriate engineering controls** No further data; see item 7.
- **Individual protection measures, such as personal protective equipment**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Wash hands before breaks and at the end of work.  
Immediately remove all soiled and contaminated clothing  
Do not eat, drink, smoke or sniff while working.  
Avoid contact with the eyes and skin.
- **Respiratory protection:**  
Use suitable respiratory protective device only when aerosol or mist is formed.  
Filter AX
- **Hand protection**  
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material**  
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **For the permanent contact gloves made of the following materials are suitable:**  
Recommended thickness of the material:  $\geq 0.7$  mm  
Fluorocarbon rubber (Viton)  
Value for the permeation: Level  $\geq 480$  min
- **As protection from splashes gloves made of the following materials are suitable:**  
Recommended thickness of the material:  $\geq 0.7$  mm  
Fluorocarbon rubber (Viton)  
Value for the permeation: Level  $\geq 480$  min
- **Eye/face protection**  
 Tightly sealed goggles
- **Body protection:**  
Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

## SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **General Information**
- **Physical state** Fluid
- **Colour:** Colourless
- **Odour:** Sweetish
- **Odour threshold:** Not determined.
- **Melting point/freezing point:**  $-116.3$  °C
- **Boiling point or initial boiling point and boiling range** 35 °C
- **Flammability** Not applicable.

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· Lower and upper explosion limit	
· Lower:	1.7 Vol %
· Upper:	36 Vol %
· Flash point:	-40 °C
· Auto-ignition temperature:	Not determined.
· Decomposition temperature:	Not determined.
· pH	Not determined.
· Viscosity:	
· Kinematic viscosity	Not determined.
· Dynamic at 20 °C:	0.233 mPas
· Solubility	
· water at 20 °C:	12 g/l
· Partition coefficient n-octanol/water (log value)	1.05
· Vapour pressure at 20 °C:	587 hPa
· Density and/or relative density	
· Density at 20 °C:	0.71 g/cm <sup>3</sup>
· Relative density	Not determined.
· Vapour density	Not determined.

· 9.2 Other information	
· Appearance:	
· Form:	Fluid
· Important information on protection of health and environment, and on safety.	
· Ignition temperature:	170 °C
· Explosive properties:	May form explosive peroxides.
· Solvent content:	
· VOC (EC)	100 %
· Change in condition	
· Evaporation rate	Not determined.

· Information with regard to physical hazard classes	
· Explosives	Void
· Flammable gases	Void
· Aerosols	Void
· Oxidising gases	Void
· Gases under pressure	Void
· Flammable liquids	Extremely flammable liquid and vapour.
· Flammable solids	Void
· Self-reactive substances and mixtures	Void
· Pyrophoric liquids	Void
· Pyrophoric solids	Void
· Self-heating substances and mixtures	Void
· Substances and mixtures, which emit flammable gases in contact with water	Void
· Oxidising liquids	Void
· Oxidising solids	Void
· Organic peroxides	Void
· Corrosive to metals	Void
· Desensitised explosives	Void

## SECTION 10: Stability and reactivity

- 10.1 Reactivity Forms explosive gas mixture with air.

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- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**  
Warming. A range from approx. 15 Kelvin below the flash point is to be rated as critical.  
light.
- **10.3 Possibility of hazardous reactions**  
A risk of explosions and/or of toxic gas formation exists with the following substances:  
azides, halogens, Halogen-halogen compounds, Non-metals, nonmetallic oxyhalides, Strong oxidizing agents, Chromium (VI) oxide, Halogen oxides, peroxide compounds, perchloric acid, perchlorates, Nitric acid, nitrating acid, Oxygen, Ozone, Turpentine oils and / or turpentine oil substitutes, nitrates, metal chlorides
- **10.4 Conditions to avoid** Keep away from open flames, hot surfaces and sources of ignition.
- **10.5 Incompatible materials:**  
oxygen  
strong acids  
oxidizing agent  
Varios plastics
- **10.6 Hazardous decomposition products:** Peroxides

## SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity**  
Harmful if swallowed.
- **LD/LC50 values relevant for classification:**

Components	Type	Value	Species
Oral	LD50	1,200 mg/kg (rat)	
Inhalative	LC50/4 h	97 mg/l (rat)	

- **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.
- **After inhalation:** No irritant effect.
- **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.
- **STOT-single exposure**  
May cause drowsiness or dizziness.
- **STOT-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**
- **Endocrine disrupting properties** Substance is not listed.

## SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.

Type of test	Effective concentration	Method	Assessment
EC50/48 h	1,380 mg/l (daphnia magna)		
LC50/48 h	2,840 mg/l (fish)		
LC50/96 h	2,560 mg/l (fish)		
NOEC/72 h	100 mg/l (Algae)		
NOEC (21 d)	100 mg/l (daphnia magna)		

- **12.2 Persistence and degradability** The product is easily biodegradable.
- **12.3 Bioaccumulative potential** Does not accumulate in organisms
- **12.4 Mobility in soil** No further relevant information available.

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- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Endocrine disrupting properties**  
The product does not contain substances with endocrine disrupting properties.
- **12.7 Other adverse effects**
- **Additional ecological information:**
- **General notes:**  
Do not allow product to reach ground water, water course or sewage system.  
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water

**SECTION 13: Disposal considerations**

- **13.1 Waste treatment methods**
- **Recommendation**  
Chemicals must be disposed of in compliance with the respective national regulations.  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:**  
Disposal must be made according to official regulations.  
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

**SECTION 14: Transport information**

· <b>14.1 UN number or ID number</b> · <b>ADR, IMDG, IATA</b>	UN1155
· <b>14.2 UN proper shipping name</b> · <b>ADR, IMDG, IATA</b>	DIETHYL ETHER (ETHYL ETHER)
· <b>14.3 Transport hazard class(es)</b> · <b>ADR</b>	
	
· <b>Class</b> · <b>Label</b>	3 (F1) Flammable liquids. 3
· <b>IMDG, IATA</b>	
	
· <b>Class</b> · <b>Label</b>	3 Flammable liquids. 3
· <b>14.4 Packing group</b> · <b>ADR, IMDG, IATA</b>	I
· <b>14.5 Environmental hazards:</b>	Not applicable.
· <b>14.6 Special precautions for user</b> · <b>Hazard identification number (Kemler code):</b> · <b>EMS Number:</b> · <b>Stowage Category</b>	Warning: Flammable liquids. 33 F-E,S-D E

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· <b>Stowage Code</b>	SW2 Clear of living quarters.
· <b>14.7 Maritime transport in bulk according to IMO instruments</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	0
· <b>Excepted quantities (EQ)</b>	Code: E3 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 300 ml
· <b>Transport category</b>	1
· <b>Tunnel restriction code</b>	D/E
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	0
· <b>Excepted quantities (EQ)</b>	Code: E3 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 300 ml
· <b>UN "Model Regulation":</b>	UN 1155 DIETHYL ETHER (ETHYL ETHER), 3, I

## SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category** P5a FLAMMABLE LIQUIDS
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 10 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50 t
- **National regulations:**
- **Other regulations, limitations and prohibitive regulations**
- **Substances of very high concern (SVHC) according to REACH, Article 57** Substance is not listed.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

## SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Abbreviations and acronyms:**  
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organisation  
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
VOC: Volatile Organic Compounds (USA, EU)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
Flam. Liq. 1: Flammable liquids – Category 1  
Acute Tox. 4: Acute toxicity – Category 4

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STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- \* **Data compared to the previous version altered.**

## Annex: Exposure scenario

- **Short title of the exposure scenario** Formulation and packing/repacking of substances and mixtures
- **Description of the activities / processes covered in the Exposure Scenario**  
See section 1 of the annex to the Safety Data Sheet.
- **Conditions of use**
- **Duration and frequency** 5 workdays/week.
- **Physical parameters**
- **Physical state** Fluid
- **Concentration of the substance in the mixture** Raw material.
- **Other operational conditions**
- **Other operational conditions affecting environmental exposure** No special measures required.
- **Other operational conditions affecting worker exposure**  
Take precautionary measures against static discharge.  
Keep away from sources of ignition - No smoking.
- **Other operational conditions affecting consumer exposure** Keep out of the reach of children.
- **Other operational conditions affecting consumer exposure during the use of the product**  
Not applicable.
- **Risk management measures**
- **Worker protection**
- **Organisational protective measures** No special measures required.
- **Technical protective measures**  
Provide explosion-proof electrical equipment.  
Ensure that suitable extractors are available on processing machines
- **Personal protective measures**  
Do not inhale gases / fumes / aerosols.  
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Measures for consumer protection**  
Ensure adequate labelling.  
Keep locked up and out of the reach of children.
- **Environmental protection measures**
- **Water** No special measures required.
- **Disposal measures**  
Disposal must be made according to official regulations.  
Ensure that waste is collected and contained.
- **Disposal procedures**  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Waste type** Partially emptied and uncleaned packaging
- **Exposure estimation**
- **Consumer** Not relevant for this Exposure Scenario.
- **Guidance for downstream users** No further relevant information available.