

Material Safety Data Sheet

According to 91/155 EEC(2001/58 EC)

Printing date: 18.12.2006

Reviewed on: 18.12.2006

1 Identification of substance:

- **Product details:**
- **Trade name:** 1,4-Butanediol
- **Application of the substance / the preparation** Chemical substance for synthesis
- **Supplier/Manufacturer:**
Penpet Petrochemical Trading GmbH
Merkur-Park
Sieker Landstrasse 126
22143 Hamburg
Germany
Tel: +49 40 675 799 0
Fax: +49 40 675 799 99 / 88
- **Information department:** see above
- **Emergency information:** National Poisons Information Centre Tel.: +44 (0)870 6006266

2 Composition/Data on components:

- **Chemical characterization:**
- **CAS No. Description:**
110-63-4 butane-1,4-diol
- **Identification number(s):**
- **EINECS Number:** 203-786-5

3 Hazards identification

- **Hazard description:**



Xn Harmful

- **Information pertaining to particular dangers for man and environment:**
R 22 Harmful if swallowed.
- **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded using company data and specialized literature.

4 First aid measures

- **General information:**
Symptoms of poisoning may occur even after several hours; therefore medical observation is suggested for at least 48 hours after the accident.
- **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness, place patients on their side in a stable position for transportation.
- **After skin contact:** Clean effected skin thoroughly with water and a mild cleansing agent. No residues shall remain on the skin.
- **After eye contact:**
Rinse the eyes with open eyelids for 10 - 15 minutes with water.
If symptoms persist consult a doctor.
- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Never give anything by mouth to a unconscious person.
Seek medical treatment.
- **Information for doctor:**
- **The following symptoms may occur:**
After swallowing:

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Nausea

Vomiting

After skin contact:

Local irritation symptoms

• Treatment:

Symptomatic treatment

In cases of irritation to the lungs, initial treatment with Dexametason metered aerosol.

5 Fire fighting measures

• Suitable extinguishing agents:CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Use fire fighting measures that suit the environment.

• Special hazards caused by the material, its products of combustion or resulting gases:

Dangerous decomposition product see chapter 10: stability and reactivity

• Protective equipment: Wear self-contained respiratory protective device.**• Additional information:**

Heating leads to pressure increase entailing danger of bursting and explosion. Immediately cool neighbouring packages and containers with sprayed water and, if possible, remove them out of the danger zone

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

• Person-related safety precautions:

Ensure adequate ventilation

Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective clothing.

Keep unprotected persons away.

• Measures for environmental protection:

Do not allow product to reach sewage system or any water course.

Do not allow to penetrate the ground/soil.

• Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Send for recovery or disposal in suitable receptacles.

Dispose contaminated material as waste according to item 13.

7 Handling and storage

• Handling**• Information for safe handling:**

Ensure good ventilation/exhaustion at the workplace.

Use solvent-proof equipment.

Restrict the quantity stored at the work place.

Avoid contact with eyes and skin.

Avoid inhalation of vapours.

• Information about protection against explosions and fires:

Fumes can combine with air to form an explosive mixture.



Keep ignition sources away - Do not smoke.

• Storage**• Requirements to be met by storerooms and receptacles:**

Store at ambient temperature.

Provide solvent resistant, sealed floor.

Suitable material for receptacle: steel

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Stainless steel

Aluminium

- **Information about storage in one common storage facility:**

Store away from foodstuffs.

Store away from feed.

- **Further information about storage conditions:**

Protect from humidity and water.

This product is hygroscopic.

- **Storage class** 10 Combustible liquids

8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Components with limit values that require monitoring at the workplace:** Not required.

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Personal protective equipment**

- **General protective and hygienic measures:**

Avoid contact with the eyes and skin.

Do not inhale gases / fumes / aerosols.

Do not eat or drink while working.

Wash hands before breaks and at the end of work.

Use skin protection cream for skin protection.

- **Breathing equipment:** If vapors are formed use suitable respiratory protective device

- **Protection of hands:**

Chemical resistant gloves

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.

Polychloroprene - CR (0,5 mm)

Nitril rubber - NBR (0,35 mm)

Butyl rubber - Butyl (0,5 mm)

Fluor rubber - FKM (0,4 mm)

- **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.

- **Eye protection:** Safety glasses

- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

- **General Information**

Form:	Fluid
Colour:	Colourless
Odour:	Nearly odourless

- **Change in condition:**

Melting point/Melting range:	20°C
Boiling point/Boiling range:	230°C

- **Flash point:** ~ 135°C

- **Ignition temperature:** 385°C

- **Decomposition temperature:** 500°C

- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

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- **Explosion limits:**
 - Lower: 1.8 Vol %
 - Upper: 15.7 Vol %
- **Vapour pressure at 20°C:** < 1 hPa
- **Density at 20°C:** 1.02 g/cm³
- **Solubility in / Miscibility with Water:** Soluble
- **Segregation coefficient (n-octanol/water):** - 0.88 log POW

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
Strong oxidants
Reducing agents
Acid chlorides
Acid anhydrides
Nitric acid
Peroxides
Isocyanates
Chlorine
- **Dangerous reactions:**
Strong exothermic reaction with above-mentioned substances.
If heated above flash point explosive vapour/air mixtures may be formed.
- **Dangerous products of decomposition:**
In the case of fire or at high temperatures the formation of the following decomposition products is possible.
Hydrazine
- **Additional information:** Hygroscopic

11 Toxicological information

- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**
Oral LD₅₀ 1525 mg/kg (rat)
Dermal LD₅₀ > 2000 mg/kg (rabbit)
Inhalative LC₅₀/4 h > 5.1 mg/l (rat)
- **Primary irritant effect:**
 - **on the skin:** No irritating effect.
 - **on the eye:** Light irritation possible
- **Sensitization:** No sensitizing effects known.
- **Other information (about experimental toxicology):** Ames-test: no mutagenic effects
- **Additional toxicological information:** Risk of skin adsorption.

12 Ecological information

- **Information about elimination (persistence and degradability):**
- **Other information:** The product is readily biodegradable.
- **Behaviour in environmental systems:**
- **Mobility and bioaccumulation potential:** Log POW < 0 - not lipophilic, no bioaccumulation.
- **Ecotoxic effects:**
- **Aquatic toxicity:**
EC₅₀/96h > 500 mg/l (daphnia magna)
IC₅₀/72h > 1000 mg/l (des)
LC₅₀/96h > 10000 mg/l (leuciscus idus)

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General notes:

Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Danger to drinking water is possible if large quantities leak into the ground or into water course.

13 Disposal considerations

- **Product:**
- **Recommendation:**



Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -
No hazardous good according to the regulation.
- **Maritime transport IMDG:**
- **IMDG Class:** No hazardous good according to the regulation.
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** No hazardous good according to the regulation.

15 Regulations

- **Markings according to EC guidelines:**
The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials
- **Code letter and hazard designation of product:**



Xn Harmful

- **Risk phrases:**
22 Harmful if swallowed.
- **Safety phrases:**
36 Wear suitable protective clothing.
60 This material and its container must be disposed of as hazardous waste.
- **National regulations**
- **Information about limitation of use:**
Restrictions on juvenile employment must be observed.
Employment restrictions concerning pregnant and lactating women must be observed.
- **Water hazard class:** Water hazard class 1 (Assessment by list): slightly hazardous for water.

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.

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