

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

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

1.1. Product identifier

Substance / mixture	2-Butyne-1,4-diol
Chemical name	substance
CAS number	2-butyne-1,4-diol
Index number	110-65-6
EC (EINECS) number	603-076-00-9
	203-788-6

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.

Acute Tox. 3, H301+H331
Acute Tox. 4, H312
Skin Corr. 1B, H314
Skin Sens. 1, H317
Eye Dam. 1, H318
STOT RE 2, H373

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

Most serious adverse effects on human health and the environment

Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure. Harmful in contact with skin. Causes serious eye damage. Toxic if swallowed or if inhaled.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

2.2. Label elements

Hazard pictogram



Signal word

Danger

Dangerous substance

2-butyne-1,4-diol

(Index: 603-076-00-9; CAS: 110-65-6)

Hazard statements

H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H373	May cause damage to organs through prolonged or repeated exposure.
H301+H331	Toxic if swallowed or if inhaled.

Precautionary statements

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311	IF exposed or concerned: Call a POISON CENTER/doctor.

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. Dust may form explosive mixture with air.

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: 603-076-00-9 CAS: 110-65-6 EC: 203-788-6	substance main component 2-butyne-1,4-diol	≥99	Acute Tox. 3, H301+H331 Acute Tox. 4, H312 Skin Corr. 1B, H314 Skin Sens. 1, H317 Eye Dam. 1, H318 STOT RE 2 (**), H373 Specific concentration limit: Eye Irrit. 2, H319: 25 % ≤ C < 50 % Skin Irrit. 2, H315: 25 % ≤ C < 50 % Skin Corr. 1B, H314: C ≥ 50 %	1, 2

SAFETY DATA SHEET

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2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

Notes

** another exposure route cannot be ruled out

1 Note D: Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed in Part 3 of Annex VI to Regulation (EC) No 1272/2008. However, such substances are sometimes placed on the market in a non-stabilised form. In this case, the supplier who places such a substance on the market must state on the label the name of the substance followed by the words "non-stabilised".

2 A substance for which exposure limits are set.

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

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. Take care of your own safety, do not let the affected person walk! Beware of the contaminated clothes. Depending on the situation, call the medical rescue service and ensure medical treatment considering the frequent need of further observation for at least 24 hours.

If on skin

Remove contaminated clothes. Take off any rings, watches, bracelets before or during washing if worn in the contaminated areas of the skin. Rinse contaminated areas with a flow of water, lukewarm at best, for 10-30 minutes; do not use any brush, soap or neutralizers. Depending on the situation, call the medical rescue service and always ensure medical treatment. Rinse cautiously with water for several minutes. Rinse skin with water or shower.

If in eyes

Do not rub your eyes - it could lead to mechanical damage of the cornea. 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. No neutralization should be performed in any case! Rinsing should be continued for 10-30 minutes from the inner to the outer eye corner to make sure that the other eye is not involved. Depending on the situation, call medical rescue service or ensure medical treatment as promptly as possible. Everyone must be referred for treatment even if affected only a little.

If swallowed

Rinse out the mouth with water and provide 2-5 dL of water. DO NOT INDUCE VOMITING! Provide medical treatment.

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

If inhaled

Inhaling dust can cause corrosion of the breathing system.

If on skin

Causes severe skin burns. May cause an allergic skin reaction.

If in eyes

Causes serious eye damage.

If swallowed

Corrosion of the digestion system can occur.

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

Symptomatic treatment.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

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. 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

Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Do not inhale dust. Prevent contact with skin and eyes.

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

Place the product mechanically in an appropriate manner. Dispose of the collected material according to the instructions in the section 13.

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 concentrations exceeding the occupational exposure limits. Do not inhale dust. Prevent contact with skin and eyes. Contaminated work clothing should not be allowed out of the workplace. 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.

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. Store locked up. Keep container tightly closed.

7.3. Specific end use(s)

not available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

European Union

Commission Directive (EU) 2017/164

Substance name (component)	Type	Value
2-butyne-1,4-diol (CAS: 110-65-6)	OEL 8 hours	0,5 mg/m ³

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

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. 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

Protective goggles or face shield (based on the nature of the work performed).

Skin protection

Hand protection: Protective gloves resistant to the product (nitrile rubber). When choosing appropriate thickness, material and permeability of the gloves, observe recommendations of their particular manufacturer. Observe other recommendations of the manufacturer. Other protection: protective workwear. Contaminated skin should be washed thoroughly.

Respiratory protection

Mask with a filter in a poorly ventilated environment. Respirator. Use insulating breathing apparatus when the exposition limits of the substances are exceeded or at the place with insufficient ventilation.

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	solid
Colour	light brown
Odour	without fragrance
Melting point/freezing point	54-57 °C
Boiling point or initial boiling point and boiling range	data not available
Flammability	data not available
Lower and upper explosion limit	data not available
Flash point	152 °C
Auto-ignition temperature	data not available
Decomposition temperature	data not available
pH	4-7.5 (undiluted at 23 °C)
Kinematic viscosity	data not available
Solubility in water	data not available
Partition coefficient n-octanol/water (log value)	data not available
Vapour pressure	data not available
Density and/or relative density	data not available
Relative vapour density	data not available
Particle characteristics	data not available

9.2. Other information

not available

SECTION 10: Stability and reactivity

10.1. Reactivity

The substance is non-flammable.

10.2. Chemical stability

The product is stable under normal conditions.

10.3. Possibility of hazardous reactions

Unknown.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

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**

No toxicological data is available for the substance. 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.

Acute toxicity

Harmful in contact with skin. Toxic if swallowed or if inhaled.

2-butyne-1,4-diol						
Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex
Oral	LD ₅₀	OECD 401	132 mg/kg		Rat (Rattus norvegicus)	

Skin corrosion/irritation

Causes severe skin burns and eye damage.

2-butyne-1,4-diol				
Route of exposure	Result	Method	Exposure time	Species
Dermal		OECD 404		Rabbit

Serious eye damage/irritation

Causes severe skin burns and eye damage. Causes serious eye damage.

2-butyne-1,4-diol				
Route of exposure	Result	Method	Exposure time	Species
Eye	Serious eye damage	OECD 405		Rabbit

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Germ cell mutagenicity

No data available for the substance. Based on available data the classification criteria are not met.

Carcinogenicity

No data available for the substance. Based on available data the classification criteria are not met.

Reproductive toxicity

No data available for the substance. Based on available data the classification criteria are not met.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

Toxicity for specific target organ - single exposure

No data available for the substance. Based on available data the classification criteria are not met.

Toxicity for specific target organ - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available for the substance. 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**

Based on available data the classification criteria are not met.

Acute toxicity

2-butyne-1,4-diol					
Parameter	Method	Value	Exposure time	Species	Environment
	OECD 201	1.048 mg/l	72 hours	Algae (Desmodesmus subspicatus)	

12.2. Persistence and degradability

No data available for the substance.

12.3. Bioaccumulative potential

No data available for the substance.

12.4. Mobility in soil

No data available for the substance.

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.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

SECTION 14: Transport information

- 14.1. UN number or ID number**
UN 2716
- 14.2. UN proper shipping name**
1,4-BUTYNEDIOL
- 14.3. Transport hazard class(es)**
6.1 Toxic substances
- 14.4. Packing group**
III - substances presenting low danger
- 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.
UN number
Classification code
Safety signs

60
2716

T2
6.1



Air transport - ICAO/IATA

Packaging instructions passenger 670
Cargo packaging instructions 677

Marine transport - IMDG

EmS (emergency plan) F-A, S-A

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 not been carried out. A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

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

H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.

SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
H301+H331	Toxic if swallowed or if inhaled.

Guidelines for safe handling used in the safety data sheet

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311	IF exposed or concerned: Call a POISON CENTER/doctor.

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
EINECS	European Inventory of Existing Commercial Chemical Substances
EmS	Emergency plan
EU	European Union
EuPCS	European Product Categorisation System
IATA	International Air Transport Association
IBC	International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals
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
LD ₅₀	Lethal dose of a substance in which it can be expected death of 50% of the population
log K _{ow}	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
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SAFETY DATA SHEET

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

2-Butyne-1,4-diol

Creation date	28th May 2020	Version	3.0
Revision date	20th March 2023		

Eye Dam.	Serious eye damage
Skin Corr.	Skin corrosion
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity - repeated 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 3.0 replaces the SDS version from 12 January 2022. Changes were made in sections 1, 2, 13, 15 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.