

Safety data sheet

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BASF Safety data sheet according to UN GHS 4th rev. Date / Revised: 16.07.2018 Product: **Golpanol® BOZ Cryst.**

Version: 3.0

(ID no. 30042612/SDS_GEN_00/EN)

Date of print 17.07.2018

1. Identification

Product identifier

Golpanol® BOZ Cryst.

Chemical name: but-2-yne-1,4-diol CAS Number: 110-65-6

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: chemical for industrial metal-working Recommended use: for industrial use only

Details of the supplier of the safety data sheet

<u>Company:</u> BASF SE 67056 Ludwigshafen GERMANY Operating Division Care Chemicals

Telephone: +49 621 60-44676 E-mail address: emd-ems-ehs-masterdata@basf.com

Emergency telephone number

International emergency number: Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

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Acute Tox. 3 (Inhalation - dust) Acute Tox. 3 (oral) Acute Tox. 3 (dermal) Skin Corr./Irrit. 1B Eye Dam./Irrit. 1 Skin Sens. 1 STOT SE 3 (irritating to respiratory system) STOT RE (Liver, Kidney, Spleen) 2 Aquatic Acute 3

Specific Concentration Limits According to UN GHS Criteria

Skin Corr./Irrit. 2: 25 - < 50 % Eye Dam./Irrit. 2: 25 - < 50 % Skin Corr./Irrit. 1B: >= 50 %

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements

Globally Harmonized System (GHS)

Pictogram:



Signal Word: Danger

Hazard Statement: H317 May cause an allergic skin reaction. H335 May cause respiratory irritation. H373 May cause damage to organs (Liver, Kidney, Spleen) through prolonged or repeated exposure. Causes severe skin burns and eye damage. H314 Toxic if swallowed, in contact with skin or if inhaled H301 + H311 + H331 H402 Harmful to aquatic life. Precautionary Statements (Prevention): P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/protective clothing/eye protection/face protection. P260 Do not breathe dust/gas/mist/vapours. P273 Avoid release to the environment. P264 Wash with plenty of water and soap thoroughly after handling. P272 Contaminated work clothing should not be allowed out of the workplace.

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| Precautionary Statements (Response): | | |
|--------------------------------------|--|--|
| P310 | Immediately call a POISON CENTER or doctor/physician. | |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. | |
| P304 + P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. | |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. | |
| P361 + P364 | Take off immediately all contaminated clothing and wash it before reuse. | |
| P301 + P330 + P331 | IF SWALLOWED: rinse mouth. Do NOT induce vomiting. | |
| Precautionary Statemen | ts (Storage): | |
| P403 + P233 P405 | Store in a well-ventilated place. Keep container tightly closed. Store locked up. | |
| Precautionary Statements (Disposal): | | |
| P501 | Dispose of contents/container to hazardous or special waste collection point. | |

According to UN GHS criteria

Hazard determining component(s) for labelling: but-2-yne-1,4-diol

Other hazards

According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition/Information on Ingredients

Substances

Chemical nature

but-2-yne-1,4-diol (Content (W/W): >= 95 %) CAS Number: 110-65-6 EC-Number: 203-788-6 INDEX-Number: 603-076-00-9

Hazardous ingredients (GHS) According to UN GHS criteria

but-2-yne-1,4-diol

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|---------------------------------|---------------------------------------|
| Content (W/W): >= 95 % - <= 100 | Acute Tox. 3 (Inhalation - dust) |
| % | Acute Tox. 3 (oral) |
| CAS Number: 110-65-6 | Acute Tox. 3 (dermal) |
| EC-Number: 203-788-6 | Skin Corr./Irrit. 1B |
| INDEX-Number: 603-076-00-9 | Eye Dam./Irrit. 1 |
| | Skin Sens. 1 |
| | STOT SE 3 (irr. to respiratory syst.) |
| | STOT RE (Liver, Kidney, Spleen) 2 |
| | Aquatic Acute 3 |
| | H317, H335, H373, H314, H301 + H311 + |
| | H331, H402 |

Specific concentration limit: Skin Corr./Irrit. 2: 25 - < 50 % Eye Dam./Irrit. 2: 25 - < 50 % Skin Corr./Irrit. 1B: >= 50 %

For the classifications not written out in full in this section the full text can be found in section 16.

Mixtures

Not applicable

4. First-Aid Measures

Description of first aid measures

Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:

Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion: Rinse mouth immediately and then drink plenty of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

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Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further important symptoms and effects are so far not known.

Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary odema prophylaxis. Medical monitoring for at least 24 hours.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media: water spray, dry powder, foam, carbon dioxide

Special hazards arising from the substance or mixture

nitrogen oxides, carbon oxides The substances/groups of substances mentioned can be released in case of fire. Under certain conditions in case of fire other hazardous combustion products may be generated.

Advice for fire-fighters

Special protective equipment: Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Avoid inhalation. Avoid contact with the skin, eyes and clothing. Personal protection: wear a tightly closed chemical protection suit and a self-contained breathing apparatus.

Environmental precautions

Do not empty into drains.

Methods and material for containment and cleaning up

For small amounts: Sweep/shovel up. For large amounts: Dampen, pick up mechanically and dispose of. Avoid raising dust. Cleaning operations should be carried out only while wearing breathing apparatus.

7. Handling and Storage

Precautions for safe handling

Ensure thorough ventilation of stores and work areas.

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Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy. Avoid dust formation.

Conditions for safe storage, including any incompatibilities

Segregate from strong acids. Segregate from strong bases. Segregate from heavy-metal salts. Segregate from strong oxidizing agents. Further information on storage conditions: Protect against moisture. Protect contents from the effects of light. Protect from air.

Storage stability: Storage temperature: < 30 °C Storage duration: 12 Months Protect against moisture. Tends to cake. From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

Protect from temperatures above: 30 °C

Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

110-65-6: but-2-yne-1,4-diol

Exposure controls

Personal protective equipment

Respiratory protection: Breathing protection if dusts are formed. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2) Consider the risk management measures as outlined in the exposure scenario.

Hand protection: Chemical resistant protective gloves (EN 374) Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): butyl rubber (butyl) - 0.7 mm coating thickness Manufacturer's directions for use should be observed because of great diversity of types.

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Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Consider the risk management measures as outlined in the exposure scenario.

Eye protection:

Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield., Consider the risk management measures as outlined in the exposure scenario.

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Do not breathe dust. Avoid contact with the skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Take off immediately all contaminated clothing.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

| Odour: almost odourless Odour threshold: | |
|---|---|
| Not determined since toxic by inhalation. | |
| pH value: 4 - 7,5 (DIN ISO 976) (100 g/l, 23 °C) | |
| Melting point: approx. 56 °C (DTA) | |
| Boiling range: 125 - 127 °C (DIN 53406) (3 mbar) | |
| Flash point: | |
| . not applicable, the product is a solid | |
| Evaporation rate: | |
| Value can be approximated from | |
| Henry's Law Constant or vapor | |
| pressure. | |
| Flammability: not flammable (Directive 84/449/EEC, A.10 Lower explosion limit: |) |
| For solids not relevant for classification and labelling. | |
| Upper explosion limit: | |
| For solids not relevant for classification and labelling. | |
| Ignition temperature: approx. 410 °C (DIN 51794) | |

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| | | | 2 440 0. p |
|---|--|--------------------|---|
| Vapour pressure: | 1,33 mbar (102 °C) | | |
| Density: | 1,11 g/cm3 (20 °C) | | |
| Relative density: | Literature data. 1,11 (20 °C) Literature data. | | |
| Relative vapour density (| (air): | | |
| Solubility in water: Partitioning coefficient n- | not applicable completely soluble octanol/water (log Kow): | -0,73 | (OECD Guideline 107) |
| Self ignition: | (25 °C; pH value: 6 - 8) Based on its structural pro product is not classified as igniting. | | Test type: Spontaneous self- ignition at room-temperature. |
| | Temperature: 335 °C Pressure: 1.013 hPa Literature data. | | Test type: Self-ignition at high temperatures. |
| Viscosity, dynamic: | | | |
| Viscosity, kinematic: | not applicable, the produc | t is a solid | |
| Explosion hazard: Fire promoting properties | not applicable, the product not explosive s: Based on its structural the product is not classifie oxidizing. | properties | (Directive 92/69/EEC, A.14) |
| Other information | | | |
| Self heating ability: | It is not a substance capal spontaneous heating. | ble of | |
| Bulk density: | approx. 500 kg/m3 | | (DIN ISO 697) |
| Miscibility with water: | 515 kg/m3 | | (DIN EN ISO 60) |
| pKA: | miscible in all proportions | | |
| P | not applicable, The substand the substand | ance does | |
| Adsorption/water - soil: Surface tension: | KOC: 1; log KOC: 0 | | (calculated) |
| Grain size distribution: | Based on chemical structu activity is not to be expect Test substance | ed. The substar | nce / product is marketed or on solid or granular form. |
| Molar mass: Angle of repose: | 86,09 g/mol 33 ° | | (funnel test (lab for material testing)) |
| | | | |

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10. Stability and Reactivity

Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

| Corrosion to metals: | Corrosive effect on: carbon steel (iron) | |
|----------------------|--|---------------------------------|
| Formation of | Remarks: | Forms no flammable gases in the |
| flammable gases: | | presence of water. |

Chemical stability

The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions

Reacts with alkalies. Reacts with acids. Reacts with heavy metal salts. Reacts with oxidizing agents.

Conditions to avoid

Temperature: > 80 °C

Incompatible materials

Substances to avoid: heavy metal salts, acids, bases, alkalies, oxidizing agents

Hazardous decomposition products

:

No hazardous decomposition products if stored and handled as prescribed/indicated.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity: Of pronounced toxicity after single ingestion. Of pronounced toxicity after short-term inhalation. Of pronounced toxicity after short-term skin contact.

Experimental/calculated data: LD50 rat (oral): 132 mg/kg (OECD Guideline 401)

LC50 rat (by inhalation): 0,69 mg/l 4 h (OECD Guideline 403) An aerosol was tested.

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LD50 rat (dermal): 659 mg/kg (OECD Guideline 402)

LD50 mouse (intraperitoneal): approx. 100 mg/kg

Irritation

Assessment of irritating effects: Corrosive! Damages skin and eyes.

Experimental/calculated data: Skin corrosion/irritation rabbit: Corrosive. (BASF-Test) An aqueous solution was tested.

Serious eye damage/irritation rabbit: irreversible damage (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization: Sensitization after skin contact possible. EU-classification

Experimental/calculated data: Patch-Test human: skin sensitizing (Human patch test)

Germ cell mutagenicity

Assessment of mutagenicity: No mutagenic effect was found in various tests with bacteria and mammals. The substance was not mutagenic in mammalian cell culture.

Carcinogenicity

Assessment of carcinogenicity: No applicable information available.

Reproductive toxicity

Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity: In animal studies the substance did not cause malformations.

Experiences in humans

Experimental/calculated data:

Sensitization described in isolated cases.

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Specific target organ toxicity (single exposure)

Assessment of STOT single: Causes temporary irritation of the respiratory tract.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Repeated oral exposure may affect certain organs. Damages the liver. Damages the kidneys. Damages the spleen.

Aspiration hazard

not applicable

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish: LC50 (96 h) 53,6 mg/l, Pimephales promelas (Flow through.) The statement of the toxic effect relates to the analytically determined concentration.

LC50 (96 h) 15,5 mg/l, other (other) Nominal concentration.

Aquatic invertebrates: EC50 (48 h) 26,79 mg/l, Daphnia magna Nominal concentration.

Aquatic plants: EC50 (72 h) 1.058 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static) Nominal concentration.

EC10 (72 h) 346 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static) Nominal concentration.

Microorganisms/Effect on activated sludge: EC10 (17 h) 1.993,3 mg/l, Pseudomonas putida (DIN 38412 Part 8, static) Nominal concentration.

EC50 (17 h) 3.940 mg/l, Pseudomonas putida (DIN 38412 Part 8, static) Nominal concentration.

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Chronic toxicity to fish: Study scientifically not justified. No data available.

Chronic toxicity to aquatic invertebrates:

No observed effect concentration (21 d) 15 mg/l, Daphnia magna (OECD Guideline 211, semistatic) Nominal concentration.

Assessment of terrestrial toxicity: Toxic effects have been observed in studies with other terrestric non-mammalians.

Persistence and degradability

Assessment biodegradation and elimination (H2O): Readily biodegradable (according to OECD criteria).

Elimination information: 91 % DOC reduction (19 d) (OECD 301E; 84/449/EEC, C.3) (aerobic, activated sludge, domestic)

90 - 100 % DOC reduction (8 d) (OECD Guideline 302 B) (activated sludge, industrial)

Assessment of stability in water:

According to structural properties, hydrolysis is not expected/probable. Information on Stability in Water (Hydrolysis): The product has not been tested. The statement has been derived from the structure of the product.

Bioaccumulative potential

Assessment bioaccumulation potential: Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Bioaccumulation potential: No data available.

Mobility in soil

Assessment transport between environmental compartments: Volatility: The substance will not evaporate into the atmosphere from the water surface. Adsorption in soil: Adsorption to solid soil phase is not expected.

Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

Other adverse effects

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The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Other ecotoxicological advice:

The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

13. Disposal Considerations

Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.

A waste code in accordance with the European waste catalog (EWC) cannot be specified, due to dependence on the usage.

The waste code in accordance with the European waste catalog (EWC) must be specified in cooperation with disposal agency/manufacturer/authorities.

Contaminated packaging:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. Transport Information

Land transport

ADR

| UN number UN proper shipping name: Transport hazard class(es): Packing group: Environmental hazards: Special precautions for user: | UN2716 1,4-BUTYNEDIOL 6.1 III no Tunnel code: E |
|--|--|
| | |

RID

| UN number | UN2716 |
|-----------------------------|----------------|
| UN proper shipping name: | 1,4-BUTYNEDIOL |
| Transport hazard class(es): | 6.1 |
| Packing group: | III |
| Environmental hazards: | no |
| Special precautions for | None known |
| user: | |

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Inland waterway transport ADN

UN numberUN2716UN proper shipping name:1,4-BUTYNEDIOLTransport hazard class(es):6.1Packing group:IIIEnvironmental hazards:noSpecial precautions forNone knownuser:UN2716

Transport in inland waterway vessel Not evaluated

Sea transport

IMDG

| UN number: | UN 2716 |
|-----------------------------|----------------------|
| UN proper shipping name: | 1,4-BUTYNEDIOL |
| Transport hazard class(es): | 6.1 |
| Packing group: | |
| Environmental hazards: | no |
| | Marine pollutant: NO |
| Special precautions for | None known |
| user: | |

Air transport

IATA/ICAO

| UN number: | UN 2716 |
|-----------------------------|--|
| UN proper shipping name: | 1,4-BUTYNEDIOL |
| Transport hazard class(es): | 6.1 |
| Packing group: | III |
| Environmental hazards: | No Mark as dangerous for the environment is needed |
| Special precautions for | None known |
| user: | |

Transport in bulk according to Annex II of MARPOL and the IBC Code

| Regulation: | Not evaluated |
|---------------------|---------------|
| Shipment approved: | Not evaluated |
| Pollution name: | Not evaluated |
| Pollution category: | Not evaluated |
| Ship Type: | Not evaluated |

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Further information

Taking into account a normal duration of transport of 90 days the following statement is valid: The product is that stable, that in packaging at temperature of 50 ° C and in tanks at temperature of 45 ° C no dangerous polymerization occurs.

15. Regulatory Information

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

Not applicable

16. Other Information

| Full text of classifications Acute Tox. | , hazard symbols and hazard statements, if mentioned in section 2 or 3: Acute toxicity |
|--|--|
| Skin Corr./Irrit. | Skin corrosion/irritation |
| Eye Dam./Irrit. | Serious eye damage/eye irritation |
| Skin Sens. | Skin sensitization |
| STOT SE | Specific target organ toxicity — single exposure |
| STOT RE | Specific target organ toxicity — repeated exposure |
| Aquatic Acute | Hazardous to the aquatic environment - acute |
| H317 | May cause an allergic skin reaction. |
| H335 | May cause respiratory irritation. |
| H373 | May cause damage to organs (Liver, Kidney, Spleen) through prolonged or repeated exposure. |
| H314 | Causes severe skin burns and eye damage. |
| H301 + H311 + H331 | Toxic if swallowed, in contact with skin or if inhaled |
| H402 | Harmful to aquatic life. |

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.