# 1-Butanol

33065-2.5L

Version 1.4 Revision Date 06.05.2024

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

### 1.1. Product identifier

| | | |
|---|---|---|
| Product name | : | 1-Butanol |
| SDS-number | : | 000000020528 |
| Type of product | : | Substance |
| Remarks | : | SDS according to Art. 31 of Regulation (EC) 1907/2006. |
| Chemical name | : | butan-1-ol; n-butanol |
| Index-No. | : | 603-004-00-6 |
| REACH Registration Number | : | no data available |

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

| | | |
|---|---|---|
| Use of the Substance/Mixture | : | Laboratory chemicals |
| Uses advised against | : | none |

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

| | | | |
|---|---|---|---|
| Company | : | Honeywell Specialty Chemicals Seelze GmbH<br>Wunstorfer Straße 40<br>30926 Seelze<br>Germany | Honeywell International, Inc.<br>115 Tabor Road<br>Morris Plains, NJ 07950-2546<br>USA |
| Telephone | : | (49) 5137-999 0 | |
| For further information, please contact: | : | SafetyDataSheet@Honeywell.com | |

### 1.4. Emergency telephone number

| | | |
|---|---|---|
| Emergency telephone number | : | +1-703-527-3887 (ChemTrec-Transport)<br>+1-303-389-1414 (Medical) |
| | : | Poison Control Center: |

United Kingdom: (+44) 844 892 0111

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**REGULATION (EC) No 1272/2008**

Flammable liquids Category 3
H226 Flammable liquid and vapour.
Acute toxicity Category 4 - Oral
H302 Harmful if swallowed.
Skin irritation Category 2
H315 Causes skin irritation.
Serious eye damage Category 1
H318 Causes serious eye damage.
Specific target organ toxicity - single exposure Category 3 - Central nervous system
H336 May cause drowsiness or dizziness.
Specific target organ toxicity - single exposure Category 3 - Respiratory system
H335 May cause respiratory irritation.

### 2.2. Label elements

**REGULATION (EC) No 1272/2008**

Hazard pictograms :



Signal word : Danger

| | | |
|---|---|---|
| Hazard statements : | H226 | Flammable liquid and vapour. |
| | H302 | Harmful if swallowed. |
| | H315 | Causes skin irritation. |
| | H318 | Causes serious eye damage. |
| | H335 | May cause respiratory irritation. |
| | 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 precautionary measures against static discharge. |
| | P260 | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. |

| | |
|---|---|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P301 + P330 + P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| 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 + P313 | IF exposed or concerned: Get medical advice/ attention. |

### 2.3. Other hazards

Repeated and prolonged exposure to solvents may cause brain and nervous system damage. Vapours may form explosive mixtures with air.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

| Chemical name | CAS-No.<br>Index-No.<br>REACH Registration Number<br>EC-No. | Classification 1272/2008 | Concentration | Remarks |
|---|---|---|---|---|
| butan-1-ol; n-butanol | 71-36-3<br>603-004-00-6<br>200-751-6 | Flam. Liq. 3; H226<br>Acute Tox. 4; H302; Oral<br>Skin Irrit. 2; H315<br>Eye Dam. 1; H318<br>STOT SE 3; H335; Respiratory system<br>STOT SE 3; H336; Central nervous system | 100 % | |

### 3.2. Mixtures

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.
For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

*General advice*:
First aider needs to protect himself. Move out of dangerous area. Take off immediately all contaminated clothing.

*Inhalation:*
If inhaled, remove to fresh air. Consult a physician.

*Skin contact:*
After contact with skin, wash immediately with plenty of soap and water. Consult a physician.

*Eye contact:*
Rinse thoroughly with plenty of water, also under the eyelids. Protect unharmed eye. Call a physician immediately.

*Ingestion:*
When swallowed, allow water to be drunk. Do NOT induce vomiting. Call a physician immediately.

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

No data available

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

Treat symptomatically.

See Section 11 for more detailed information on health effects and symptoms. :

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

*Suitable extinguishing media:*
Water spray
Foam
Carbon dioxide (CO2)
Dry powder

*Extinguishing media which shall not be used for safety reasons:*
High volume water jet

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

No data available

### 5.3. Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

## SECTION 6: Accidental release measures

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

Ensure adequate ventilation.

### 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

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

Soak up with inert absorbent material.
Pick for disposal in tightly closed containers

### 6.4. Reference to other sections

For personal protection see section 8.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

*Advice on safe handling:*
Exhaust ventilation at the object is necessary. Take precautionary measures against static discharges.

*Advice on protection against fire and explosion:*
Take precautionary measures against static discharges.

*Hygiene measures:*
General industrial hygiene practice. Take off all contaminated clothing immediately. Recommended preventive skin protection

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

*Further information on storage conditions:*
Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

### 7.3. Specific end use(s)

no additional data available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

***Occupational exposure limits:***

| Components | Basis / Value type | Value / Form of exposure | Exceeding Factor | Remarks |
|---|---|---|---|---|
| butan-1-ol; n-butanol | EH40 WEL | | | Listed |
| butan-1-ol; n-butanol | EH40 WEL STEL | 154 mg/m3 50 ppm | 15 minutes | |
| butan-1-ol; n-butanol | EH40 WEL SKIN_DES | | | Can be absorbed through the skin. |
| butan-1-ol; n-butanol | EU SCOELS | | | Included in the regulation but with no data values. See regulation for further details. |
| butan-1-ol; n-butanol | EU SCOELS | | | Listed |

EH40 WEL - UK. EH40 Workplace Exposure Limits (WELs), as amended
-
EH40 WEL - UK. EH40 Workplace Exposure Limits (WELs), as amended
STEL - Short term exposure limit
EH40 WEL - UK. EH40 Workplace Exposure Limits (WELs), as amended
SKIN_DES - Skin designation:

### DNEL/ PNEC-Values

| Component | End-use/impact | Exposure duration | Value | Exposure routes | Remarks |
|---|---|---|---|---|---|
| butan-1-ol; n-butanol | Workers / Long-term systemic effects | | 310 mg/m3 | Inhalation | |
| butan-1-ol; n-butanol | Consumers / Long-term systemic effects | | 55 mg/m3 | Inhalation | |
| butan-1-ol; n-butanol | Consumers / Long-term | | 3,125mg/kg bw/d | Ingestion | |

| | | | | | |
|---|---|---|---|---|---|
| | systemic effects | | | | |

| Component | Environmental compartment / Value | Remarks |
|---|---|---|
| butan-1-ol; n-butanol | Fresh water: 0,082 mg/l | Assessment factor: 50 |
| butan-1-ol; n-butanol | Marine water: 0,0082 mg/l | Assessment factor: 500 |
| butan-1-ol; n-butanol | Sewage treatment plant: 2476 mg/l | |
| butan-1-ol; n-butanol | Fresh water sediment: 0,178 mg/kg dw | |
| butan-1-ol; n-butanol | Marine sediment: 0,0178 mg/kg dw | |
| butan-1-ol; n-butanol | Soil: 0,015 mg/kg dw | |

### 8.2. Exposure controls

**Occupational exposure controls**

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.
Do not breathe vapours/dust.

**Personal protective equipment**
*Respiratory protection:*
In the case of dust or aerosol formation use respirator with an approved filter.

*Hand protection:*
Glove material: Nitrile rubber
Break through time: > 480 min
Glove thickness: 0,4 mm
Camatril® 730
Gloves must be inspected prior to use.
Replace when worn.

Remarks:Supplementary note: The specifications are based on information and tests from similar substances by analogy.
Due to varying conditions ( e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374.
Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer reccomends to use the chemical protective glove in practice not longer than 50% of the recomended permeation time.
Manufacturer´s directions for use should be observed because of great diversity of types .
Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de

*Eye protection:*
Safety goggles

*Skin and body protection:*
Protective suit

**Environmental exposure controls**

Handle in accordance with local environmental regulations and good industrial practices.

## SECTION 9: Physical and chemical properties

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

| | | |
|---|---|---|
| (a) Physical state | : | liquid |
| (b) Colour | : | colourless |
| (c) Odour | : | characteristic |
| (d) Melting point/freezing point | : | < -90 °C<br>Method: ISO 3016 |
| (e) Boiling point/boiling range | : | 119 °C<br>at 1.013 hPa<br>Method: OECD Test Guideline 103 |
| (g) Lower and upper explosion limit | : | Lower explosion limit<br>1,5 %(V) |

| | | |
|---|---|---|
| | : | Upper explosion limit<br>9,4 %(V) |
| (h) Flash point | : | ca. 35 °C<br>at 1.013 hPa<br>Method: closed cup |
| (i) Auto-ignition temperature | : | 355 °C<br>at 1.019 hPa<br>Method: DIN 51794<br>not auto-flammable |
| (j) Decomposition temperature | : | At normal pressure may be distilled without decomposition. |
| (k) pH | : | 7<br>Concentration: 60 g/l<br>at 20 °C |
| (l) Viscosity, kinematic | : | No data available |
| (m) Solubility(ies) | : | Water solubility:<br>66 g/l<br>at 20 °C<br>pH<br>Method: OECD Test Guideline 105<br><br>Solubility in other solvents:<br>Soluble in most organic solvents |
| (n) Partition coefficient: n-octanol/water | : | log Pow 1<br>at: 25 °C<br>Method: 92/69/EEC, A.8 |
| (o) Vapour pressure | : | 6,7 hPa<br>at 20 °C |
| (p) Density and / or relative density | : | 0,81 g/cm3<br>at 20 °C<br>Method: DIN 51757 |

(q) Relative vapour density : No data available

(r) Particle characteristics : No data available

**9.2 Other Information**

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Evaporation rate : No data available

Viscosity, dynamic : 2,95 mPa.s
at 20 °C
Method: ASTM D 445

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No data available

### 10.2. Chemical stability

At normal pressure may be distilled without decomposition.

### 10.3. Possibility of hazardous reactions

No data available

### 10.4. Conditions to avoid

Keep away from heat and sources of ignition.

### 10.5. Incompatible materials

Incompatible with oxidizing agents.
Plastic materials can be attacked.

### 10.6. Hazardous decomposition products

Carbon dioxide ($CO_2$)

Carbon monoxide

## SECTION 11: Toxicological information

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

***(a) Acute toxicity***

*Acute oral toxicity:*
LD50
Species: Rat
Value: 2.292 mg/kg
Method: OECD Test Guideline 401
Classified as harmful according to EU legislation.

*Acute dermal toxicity:*
LD50
Species: Rabbit
Value: ca. 3.430 mg/kg
Method: OECD Test Guideline 402

*Acute inhalation toxicity:*
LC50
Species: Rat
Value: > 17,6 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
Technically maximum achievable concentration.

*Acute toxicity (other routes of administration):*
No data available

***(b) Skin corrosion/irritation:***
Species: Rabbit
Result: irritating
Exposure time: 2 h
Method: Draize Test

***(c) Serious eye damage/eye irritation:***
Species: Rabbit
Result: irritating
Exposure time: 24 h
Method: OECD Test Guideline 405

***(d) Respiratory or skin sensitisation:***

No data available

***(e) Germ cell mutagenicity:***
Note: Not classified due to data which are conclusive although insufficient for classification.

***(f) Carcinogenicity:***
Note: No data available

***(g) Reproductive toxicity:***
Remarks: Not classified due to data which are conclusive although insufficient for classification.
Remarks: Not classified due to data which are conclusive although insufficient for classification.
***(h) STOT-single exposure:***
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

***(i) STOT - repeated exposure:***
Note: Not classified due to data which are conclusive although insufficient for classification.

***(j) Aspiration hazard:***
No data available

### 11.2. Information on other hazards

*Endocrine disrupting properties*
No data available

*Other information:*
Irritating to skin and mucous membranes
Risk of serious damage to eyes.
Inhalation of high vapour concentrations can cause CNS-depression and narcosis.
Not mutagenic in Ames Test

## SECTION 12: Ecological information

### 12.1. Toxicity

*Toxicity to fish:*
LC50
static test
Species: Pimephales promelas (fathead minnow)
Value: 1.376 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

NOEC
static test
Species: Pimephales promelas (fathead minnow)
Value: 519 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

*Toxicity to aquatic plants:*
EC50
static test
Species: Pseudokirchneriella subcapitata (green algae)
Value: 225 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

*Toxicity to Microorganisms:*
EC50
static test
Species: Pseudomonas putida
Value: 4.390 mg/l
Exposure time: 17 h
Method: DIN 38412

*Toxicity to aquatic invertebrates:*
EC50
static test
Species: Daphnia magna (Water flea)
Value: 1.328 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

*Chronic toxicity to aquatic invertebrates:*
NOEC
semi-static test
Species: Daphnia magna (Water flea)
Value: 4,1 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

**12.2. Persistence and degradability**

*Biodegradability*:

aerobic
Biodegradation: 92 %
Exposure time: 20 d
Method: OECD
Readily biodegradable.

### 12.3. Bioaccumulative potential

No data available

### 12.4. Mobility in soil

No data available

### 12.5. Results of PBT and vPvB assessment

No data available

### 12.6. Endocrine disrupting properties

No data available

### 12.7. Other adverse effects

Should not be released into the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

*Product:*
Dispose according to legal requirements.

*Packaging:*
Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

*Further information:*
Provisions relating to waste:
EC Directive 2006/12/EC; 2008/98/EEC
Regulation No. 1013/2006
For personal protection see section 8.

## SECTION 14: Transport information

**14.1 UN number or ID number**
ADR/RID:1120 IMDG:1120 IATA:1120

**14.2 UN proper shipping name**
ADR/RID:BUTANOLS
IMDG:BUTANOLS
IATA:Butanols

**14.3 Transport hazard class(es)**
ADR/RID:3 IMDG: 3 IATA: 3

**14.4 Packaging group**
ADR/RID:III IMDG: III IATA: III

**14.5 Environmental hazards**
ADR/RID:no Marine pollutant: no

**14.6 Special precautions for user**
No data available

**14.7 Maritime transport in bulk according to IMO instruments**
No data available

## SECTION 15: Regulatory information

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

| Basis | Value | Remarks |
|---|---|---|
| Substances of very high concern (SVHC) | | This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of ≥ 0.1 % (w/w). |

**Other inventory information**

USA. List of Active Substances on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory, as amended
On TSCA Inventory

Australia. Inventory of Industrial Chemicals (AIIC), as amended
On the inventory, or in compliance with the inventory

Canada. Domestic Substances List (DSL), as amended
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List
On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines. Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances (IECSC)
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
On the inventory, or in compliance with the inventory

Taiwan Chemical Substance Inventory (TCSI)
On the inventory, or in compliance with the inventory

### 15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

### Text of H-statements referred to under heading 3

| | | | |
|---|---|---|---|
| butan-1-ol; n-butanol | : | H226 | Flammable liquid and vapour. |
| | | H302 | Harmful if swallowed. |
| | | H315 | Causes skin irritation. |
| | | H318 | Causes serious eye damage. |
| | | H336 | May cause drowsiness or dizziness. |
| | | H335 | May cause respiratory irritation. |

**Further information**

All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:
EC European Community
CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very biaccumulative substance
PBT Persistent, bioaccmulative und toxic substance

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