

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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.

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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. Substance

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

3.2. Mixture

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.

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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.

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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.

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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 SKIN_DES			Can be absorbed through the skin.
butan-1-ol; n-butanol	EH40 WEL STEL	154 mg/m ³ 50 ppm	15 minutes	

SKIN_DES - Skin designation:

STEL - Short term exposure limit

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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/m ³	Inhalation	
butan-1-ol; n-butanol	Consumers / Long-term systemic effects		55 mg/m ³	Inhalation	
butan-1-ol; n-butanol	Consumers / Long-term systemic effects		3,125mg/kg bw/d	Ingestion	

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

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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 recommends to use the chemical protective glove in practice not longer than 50% of the recommended 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

Physical state	:	liquid
Colour	:	colourless
Odour	:	characteristic
molecular weight	:	74,12 g/mol

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

Melting point/range	: < -90 °C Method: ISO 3016
Boiling point/boiling range	: 119 °C at 1.013 hPa Method: OECD Test Guideline 103
Upper explosion limit	: 9,4 %(V)
Lower explosion limit	: 1,5 %(V)
Flash point	: ca. 35 °C at 1.013 hPa Method: closed cup
Auto-ignition temperature	: 355 °C at 1.019 hPa Method: DIN 51794
Decomposition temperature	: At normal pressure may be distilled without decomposition.
pH	: 7 Concentration: 60 g/l at 20 °C
Auto-ignition temperature	: not auto-flammable
Viscosity, kinematic	: No data available
Water solubility	: 66 g/l at 20 °C Method: OECD Test Guideline 105
Solubility in other solvents	: Soluble in most organic solvents
Partition coefficient: n-octanol/water	: log Pow 1 at: 25 °C Method: 92/69/EEC, A.8
Vapour pressure	: 6,7 hPa at 20 °C

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

Density : 0,81 g/cm³
at 20 °C
Method: DIN 51757

Relative vapour density : 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.

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

10.6. Hazardous decomposition products

Carbon dioxide (CO₂)
Carbon monoxide

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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.

Skin irritation:

Species: Rabbit

Result: irritating

Exposure time: 2 h

Method: Draize Test

Eye irritation:

Species: Rabbit

Result: irritating

Exposure time: 24 h

Method: OECD Test Guideline 405

Respiratory or skin sensitisation:

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

No data available

Repeated dose toxicity:

Note: Not classified due to data which are conclusive although insufficient for classification.

Carcinogenicity:

Note: No data available

Germ cell mutagenicity:

Note: Not classified due to data which are conclusive although insufficient for classification.

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.

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)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell
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1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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
ADR/RID:1120

IMDG:1120

IATA:1120

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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 $\geq 0.1\%$ (w/w).

Poison Control Center

Country	Phone Number
Austria	+4314064343
Belgium	070 245245
Bulgaria	(+)35929154233

Country	Phone Number
Liechtenstein	+41 442515151
Lithuania	+370532362052
Luxembourg	070245245; (+352)80002-5500

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

Croatia	(+3851)23-48-342
Cyprus	+357 2240 5611
Czech Republic	+420224919293; +420224915402
Denmark	82121212
Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	+30 210 779 3777
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
Italy	0382 24444
Germany	Berlin : 030/19240
	Bonn : 0228/19240
	Erfurt : 0361/730730
	Freiburg : 0761/19240
	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
Munich : 089/19240	
Latvia	+37167042473

Malta	+356 2395 2000
Netherlands	030-2748888
Norway	22591300
Poland	+48 42 25 38 400
Portugal	800250250
Romania	+40 21 318 3606
Slovakia (NTIC)	+421 2 54 774 166
Slovenia	+386 1 400 6051
Spain	+34915620420
Sweden	112 (begär Gifinformation);+46104566786
Switzerland	145
United Kingdom	(+44) 844 892 0111

Other inventory information

US. Toxic Substances Control Act
On TSCA Inventory

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

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

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.
		H335	May cause respiratory irritation.
		H336	May cause drowsiness or dizziness.

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

1-Butanol

33065-1L

Version 1.3

Revision Date 17.12.2022

CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very biaccumulative substance
PBT Persistent, bioaccumulative und toxic substance

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.
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