

**n-Butanol**Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Identification of the substance	<b>n-Butanol</b>
Registration number (REACH)	01-2119484630-38-xxxx
EC number	200-751-6
CAS number	71-36-3

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

Relevant identified uses	Solvents
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**1.3 Details of the supplier of the safety data sheet**FRIEDRICH SCHARR KG  
Liebknechtstraße 50  
70565 Stuttgart  
GermanyTelephone: +49 711 7868-0  
Telefax: +49 711 7868-489  
e-mail: info@scharr.de  
Website: www.scharr.de

e-mail (competent person) produktsicherheit@scharr.de

**1.4 Emergency telephone number**

Poison centre			
Country	Name	Postal code/city	Telephone
Germany	Giftinformation Freiburg	79106 Freiburg im Breisgau	+49 (0)761 19240

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 (CLP)

Hazard class	Category	Hazard class and category	Hazard statement
flammable liquid	3	Flam. Liq. 3	H226
acute toxicity (oral)	4	Acute Tox. 4	H302
skin corrosion/irritation	2	Skin Irrit. 2	H315
serious eye damage/eye irritation	1	Eye Dam. 1	H318
specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335
specific target organ toxicity - single exposure (narcotic effects, drowsiness)	3	STOT SE 3	H336

For full text of abbreviations: see SECTION 16.

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources.

### 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

- signal word danger

- pictograms

GHS02, GHS05, GHS07



- 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.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/....  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P403+P235 Store in a well-ventilated place. Keep cool.  
P501 Dispose of contents/container to industrial combustion plant.

### 2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Name of substance Butan-1-ol  
Identifiers  
REACH Reg. No 01-2119484630-38-xxxx  
EC No 200-751-6  
CAS No 71-36-3

Specific Conc. Limits	M-Factors	ATE	Exposure route
-	-	500 mg/kg	oral

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

##### General notes

Do not leave affected person unattended. Remove victim out of the danger area. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Self-protection of the first aider.

##### Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

##### Following skin contact

Wash with plenty of soap and water.

##### Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

##### Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a physician immediately.

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

Narcotic effects. Breathing difficulties. Headache. Vertigo.

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

Subsequent observance for pneumonia and pulmonary oedema. Supervise the blood circulation.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

##### Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO<sub>2</sub>), Sand

##### Unsuitable extinguishing media

Water jet

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

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Danger of bursting container.

##### Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

#### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### SECTION 6: Accidental release measures

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

For non-emergency personnel

Remove persons to safety. Ventilate affected area. Avoidance of ignition sources.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Provision of sufficient ventilation.

#### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

#### 6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

#### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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

Managing of associated risks

- explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### - flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

### - ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

### - Lagerklasse (storage class according to TRGS 510, 3 (flammable and desensitizing explosive liquids) Germany)

### - packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

## 7.3 Specific end use(s)

See section 16 for a general overview.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)								
Country	Name of substance	CAS No	Identifier	TWA [ppm]	TWA [mg/m <sup>3</sup> ]	STEL [ppm]	STEL [mg/m <sup>3</sup> ]	Source
AT	Butan-1-ol	71-36-3	MAK	50	150	200	600	GKV
CH	Butan-1-ol	71-36-3	MAK	100	310	100	310	SUVA
DE	Butan-1-ol	71-36-3	AGW	100	310	100	310	TRGS 900

#### Notation

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)  
TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Biological limit values						
Country	Name of agent	Parameter	Notation	Identifier	Value	Source
CH	n-butanol	n-butanol	crea	BAT	2 mg/g	SUVA
CH	n-butanol	n-butanol	crea	BAT	10 mg/g	SUVA
DE	1-butanol	1-butanol	crea	BLV	2 mg/g	TRGS 903
DE	1-butanol	1-butanol	hydr, crea	BLV	10 mg/g	TRGS 903

#### Notation

crea creatinine  
hydr hydrolysis

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	310 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - local effects

### Environmental values

Relevant PNECs and other threshold levels				
End-point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	2,25 mg/l	aquatic organisms	water	intermittent release
PNEC	0,082 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0,008 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	2.476 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0,324 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0,032 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0,017 mg/kg	terrestrial organisms	soil	short-term (single instance)

## 8.2 Exposure controls

### Appropriate engineering controls

General ventilation.

### Individual protection measures (personal protective equipment)

#### Eye/face protection

Wear eye/face protection.

#### Skin protection

##### - hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

##### - type of material

IIR: isobutene-isoprene (butyl) rubber, Nitrile

##### - material thickness

Nitril 0,55 mm IIR 0,3 mm

##### - breakthrough times of the glove material

0,4 mm

>480 minutes (permeation: level 6)

##### - protective gloves - splash protection

Type of material IIR: isobutene-isoprene (butyl) rubber

##### - other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

**n-Butanol**Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

**Respiratory protection**

[In case of inadequate ventilation] wear respiratory protection. Type: AX (gas filters and combined filters against low-boiling point organic compounds, colour code: Brown).

**Environmental exposure controls**

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties**

Physical state	liquid
Colour	colourless
Odour	characteristic
Melting point/freezing point	<-90 °C
Boiling point or initial boiling point and boiling range	119 °C at 1.013 hPa
Evaporation rate	not determined
Flammability	flammable liquid in accordance with GHS criteria
Lower and upper explosion limit	1,4 vol% - 11,3 vol%
Flash point	35 °C at 1.013 hPa
Auto-ignition temperature	355 °C at 1.019 hPa
pH (value)	not determined
Kinematic viscosity	3,641 mm <sup>2</sup> /s at 20 °C

**Solubility(ies)**

Water solubility	66 g/l at 20 °C
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**Partition coefficient**

Partition coefficient n-octanol/water (log value)	1 (pH value: 7, 25 °C)
Soil organic carbon/water (log KOC)	0,541

Vapour pressure	<10 hPa at 20 °C
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**Density and/or relative density**

Density	809,5 kg/m <sup>3</sup> at 20 °C
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**n-Butanol**Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Particle characteristics	not relevant (liquid)
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**9.2 Other information**

Information with regard to physical hazard classes	there is no additional information
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Other safety characteristics

Surface tension	69,9 mN/m (20 °C)
Temperature class (EU, acc. to ATEX)	T2 (maximum permissible surface temperature on the equipment: 300°C)

**SECTION 10: Stability and reactivity****10.1 Reactivity**

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". It's a reactive substance. The mixture contains reactive substance(s). Risk of ignition.

If heated:

Risk of ignition

**10.2 Chemical stability**

See below "Conditions to avoid".

**10.3 Possibility of hazardous reactions**

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture.

**10.4 Conditions to avoid**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

**10.5 Incompatible materials**

Oxidisers

**10.6 Hazardous decomposition products**

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

**SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Classification according to GHS (1272/2008/EC, CLP)**

Acute toxicity

Harmful if swallowed.

GHS of the United Nations, annex 4:

- acute toxicity estimate (ATE)

Oral 500 mg/kg



## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Acute toxicity			
Exposure route	Endpoint	Value	Species
inhalation: vapour	LC50	17.760 mg/m <sup>3</sup> /4h	rat
oral	LD50	2.292 mg/kg	rat
dermal	LD50	3.430 mg/kg	rabbit

### Skin corrosion/irritation

Causes skin irritation.

### Serious eye damage/eye irritation

Causes serious eye damage.

### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

### Carcinogenicity

Shall not be classified as carcinogenic.

### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

### Specific target organ toxicity - single exposure

May cause respiratory irritation. May cause drowsiness or dizziness.

### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

## 11.2 Information on other hazards

There is no additional information.

## SECTION 12: Ecological information

### 12.1 Toxicity

Acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.  
Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV): WGK 1, slightly hazardous to water (Germany)

Aquatic toxicity (acute)			
Endpoint	Value	Species	Exposure time
LC50	1.376 mg/l	fish	96 h
EC50	1.328 mg/l	aquatic invertebrates	48 h
ErC50	225 mg/l	algae	96 h

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Aquatic toxicity (chronic)			
Endpoint	Value	Species	Exposure time
EC50	18 mg/l	aquatic invertebrates	21 d

### Biodegradation

The substance is readily biodegradable. The relevant substances of the mixture are readily biodegradable. Data are not available.

## 12.2 Persistence and degradability

Process of degradability		
Process	Degradation rate	Time
biotic/abiotic	70 %	19 d
oxygen depletion	68 %	5 d

## 12.3 Bioaccumulative potential

Data are not available.

n-octanol/water (log KOW)	1 (pH value: 7, 25 °C)
BCF	3,16

## 12.4 Mobility in soil

Henry's law constant	0,054 Pa m <sup>3</sup> /mol
The Organic Carbon normalised adsorption coefficient	0,541 (ECHA)

## 12.5 Results of PBT and vPvB assessment

Data are not available.

## 12.6 Endocrine disrupting properties

Not listed.

## 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

### Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

## SECTION 14: Transport information

### 14.1 UN number or ID number

ADR/RID/ADN	UN 1120
IMDG-Code	UN 1120
ICAO-TI	UN 1120

### 14.2 UN proper shipping name

ADR/RID/ADN	BUTANOLS
IMDG-Code	BUTANOLS
ICAO-TI	Butanols

### 14.3 Transport hazard class(es)

ADR/RID/ADN	3
IMDG-Code	3
ICAO-TI	3

### 14.4 Packing group

ADR/RID/ADN	III
IMDG-Code	III
ICAO-TI	III

### 14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

### 14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

### 14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

### Information for each of the UN Model Regulations

#### Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - additional information

Classification code	F1
Danger label(s)	3



Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30

### International Maritime Dangerous Goods Code (IMDG) - additional information

Marine pollutant	-
Danger label(s)	3



Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-D
Stowage category	A

### International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Danger label(s)	3
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Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

## SECTION 15: Regulatory information

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

#### Relevant provisions of the European Union (EU)

#### List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

not listed

#### Seveso Directive

2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
P5c	flammable liquids (cat. 2, 3)	5.000	50.000	51)

Notation

51) flammable liquids, categories 2 or 3 not covered by P5a and P5b

#### VOC Deco-Paint Directive 2004/42/EC

VOC content	100 %
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#### Industrial Emissions Directive (IED)

VOC content	100 %
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## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

### Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

### Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

### Water Framework Directive (WFD)

not listed

### Regulation on persistent organic pollutants (POP)

Not listed.

### National regulations (Austria)

Ordinance on combustible liquids (VbF)

- VbF (group and hazard class) AII (combustible liquids of group A, hazard class II)

### National regulations (Germany)

#### Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV)

Wassergefährdungsklasse, WGK 1 slightly hazardous to water  
(water hazard class)

Index number 39

### 15.1.3. Technical instructions on air quality control (Germany)

2

Number	Group of substances	Class	Conc.	Mass flow	Mass concentration	Notation
5.2.5	organic substances		≥ 25 wt%	0,5 kg/h	50 mg/m <sup>3</sup>	3)

Notation

3) a total mass flow of 0.50 kg/h or a total mass concentration of 50 mg/m<sup>3</sup>, each of which to be indicated as total carbon, shall not be exceeded (except organic particulate matter)

### National regulations Switzerland

#### Ordinance on the incentive tax on volatile organic compounds (VOCV)

VOC content (object of taxation): 100 %  
2905.1300 (butan-1-ol (butyl alcohol))

### National inventories

Country	Inventory	Status
AU	AICS	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
JP	ISHA-ENCS	substance is listed

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Country	Inventory	Status
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

### Legend

AICS	Australian Inventory of Chemical Substances
CICR	Chemical Inventory and Control Regulation
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
INSQ	National Inventory of Chemical Substances
ISHA-ENCS	Inventory of Existing and New Chemical Substances (ISHA-ENCS)
KECI	Korea Existing Chemicals Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

### Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)
8.2	Breakthrough times of the glove material: >480 minutes (permeation: level 6)	Breakthrough times of the glove material: 0,4 mm  >480 minutes (permeation: level 6)
8.2	Respiratory protection: In case of inadequate ventilation wear respiratory protection.	Respiratory protection: [In case of inadequate ventilation] wear respiratory protection. Type: AX (gas filters and combined filters against low-boiling point organic compounds, colour code: Brown).

### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
AGW	Workplace exposure limit

## n-Butanol

Version number: 3.0  
Replaces version of: 15.07.2021 (2)

Revision: 04.04.2022

Abbr.	Descriptions of used abbreviations
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
GKV	Grenzwerteverordnung
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	Short-term exposure limit
SUVA	Grenzwerte am Arbeitsplatz, Suva
SVHC	Substance of Very High Concern

## n-Butanol

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Abbr.	Descriptions of used abbreviations
TRGS	Technische Regeln für Gefahrstoffe (technical rules for hazardous substances, Germany)
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TRGS 903	Biologische Grenzwerte (TRGS 903)
TWA	Time-weighted average
VbF	Ordinance on combustible liquids (Austria)
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

### Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
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.

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.