

# Material Safety Data Sheet

According to 91/155 EEC

## 1 Identification of the substance/preparation and of the company/undertaking

- **Product details**
- **Trade name:** n Butanol

## 2 Composition/information on ingredients

- **Chemical characterization:**
- **CAS No. Description**  
71-36-3 butan-1-ol
- **Identification number(s)**
- **EINECS Number:** 200-751-6
- **EU Number:** 603-004-00-6

## 3 Hazards identification

- **Hazard description:**



Xn Harmful

- **Information concerning particular hazards for human and environment:**

R 10 Flammable.  
R 22 Harmful if swallowed.  
R 37/38 Irritating to respiratory system and skin.  
R 41 Risk of serious damage to eyes.  
R 67 Vapours may cause drowsiness and dizziness.

## 4 First aid measures

- **General information:**  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Call for a doctor immediately.

## 5 Fire-fighting measures

- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet

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- **Protective equipment:** *No special measures required.*

### 6 Accidental release measures

- **Person-related safety precautions:** *Wear protective equipment. Keep unprotected persons away.*
- **Measures for environmental protection:** *Do not allow to enter sewers/ surface or ground water.*
- **Measures for cleaning/collecting:**  
*Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
 Dispose contaminated material as waste according to item 13.  
 Ensure adequate ventilation.*

### 7 Handling and storage

- **Handling:**
- **Information for safe handling:** *No special requirement*
- **Information about fire - and explosion protection:**  
*Keep ignition sources away - Do not smoke.  
 Protect against electrostatic charges.*
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** *No special requirements.*
- **Information about storage in one common storage facility:** *Not required.*
- **Further information about storage conditions:** *Keep container tightly sealed.*

### 8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** *No further data; see item 7.*

- **Ingredients with limit values that require monitoring at the workplace:**

#### *n-butanol*

PEL (USA)	300 mg/m <sup>3</sup> , 100 ppm
REL (USA)	Short-term value: C 150 mg/m <sup>3</sup> , C 50 ppm
	Skin
TLV (USA)	61 mg/m <sup>3</sup> , 20 ppm
WEL (Great Britain)	Short-term value: 154 mg/m <sup>3</sup> , 50 ppm

- **Additional information:** *The lists valid during the making were used as basis.*
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
*Keep away from foodstuffs, beverages and feed.  
 Immediately remove all soiled and contaminated clothing  
 Wash hands before breaks and at the end of work.  
 Avoid contact with the skin.  
 Avoid contact with the eyes and skin.*
- **Respiratory protection:**  
*In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.*
- **Protection of hands:**



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

### 9 Physical and chemical properties

· **General Information**

<b>Form:</b>	Fluid
<b>Colour:</b>	Colourless
<b>Odour:</b>	Alcohol-like

· **Change in condition**

<b>Melting point/Melting range:</b>	-89°C
<b>Boiling point/Boiling range:</b>	116-118°C

· **Flash point:** 35°C

· **Ignition temperature:** 340°C

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

· **Explosion limits:**

<b>Lower:</b>	1.5 Vol %
<b>Upper:</b>	9.4 Vol %

· **Vapour pressure at 20°C:** 6.7 hPa

· **Density at 20°C:** 0.81 g/cm<sup>3</sup>

· **Solubility in / Miscibility with water at 20°C:** 77 g/l

· **pH-value (70 g/l) at 20°C:** 7

· **Viscosity:**

<b>Dynamic at 20°C:</b>	2.95 mPas
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### 10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

· **Dangerous reactions** No dangerous reactions known.

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· **Dangerous decomposition products:** No dangerous decomposition products known.

### 11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values relevant for classification:**

Oral	LD50	790 mg/kg (rat)
Dermal	LD50	3400 mg/kg (rabbit)
Inhalative	LC50/4 h	8000 mg/l (rat)

· **Primary irritant effect:**

- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.

### 12 Ecological information

· **General notes:**

Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

### 13 Disposal considerations

· **Product:**

· **Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packaging:**

· **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

· **Land transport ADR/RID (cross-border)**



- **ADR/RID class:** 3 Flammable liquids.
- **Danger code (Kemler):** 30
- **UN-Number:** 1120
- **Packaging group:** III
- **Hazard label:** 3
- **Description of goods:** 1120 BUTANOLS

· **Maritime transport IMDG:**



- **IMDG Class:** 3

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- **UN Number:** 1120
- **Label** 3
- **Packaging group:** III
- **EMS Number:** F-E,S-D
- **Proper shipping name:** BUTANOLS

- **Air transport ICAO-TI and IATA-DGR:**



- **ICAO/IATA Class:** 3
- **UN/ID Number:** 1120
- **Label** 3
- **Packaging group:** III
- **Proper shipping name:** BUTANOLS

### 15 Regulatory information

- **Labelling according to EU guidelines:**

*The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.*

- **Code letter and hazard designation of product:**

*Xn Harmful*

- **Risk phrases:**

- 10 *Flammable.*
- 22 *Harmful if swallowed.*
- 37/38 *Irritating to respiratory system and skin.*
- 41 *Risk of serious damage to eyes.*
- 67 *Vapours may cause drowsiness and dizziness.*

- **Safety phrases:**

- 2 *Keep out of the reach of children.*
- 7/9 *Keep container tightly closed and in a well-ventilated place.*
- 13 *Keep away from food, drink and animal feedingstuffs.*
- 26 *In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.*

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

- **Department issuing MSDS:** *Product safety department.*
- **Contact:** *Terminal Manager*