

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 31.10.2012

Revision: 31.10.2012

1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
- **Trade name:** n-butanol
- **Article number:** 40-1800-25
- **CAS Number:**
71-36-3
- **EC number:**
200-751-6
- **Index number:**
603-004-00-6
- **Registration number** 01-2119484630-38
- **Relevant identified uses of the substance or mixture and uses advised against**
Use as intermediate; Use in cleaning agents; Use in lubricants; Metal working fluids / rolling oils; Use in Coatings (paint,ink,toners,adhesives); Use in polymer production; Use in Laboratories; Use as consumer care product or disinfectant.
- **Sector of Use**
SU0 Other
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
- **Product category**
PC0 Other
PC1 Adhesives, sealants
PC4 Anti-Freeze and de-icing products
PC6 Automotive care products
PC9a Coatings and paints, thinners, paint removers
PC9b Fillers, putties, plasters, modelling clay
PC9c Finger paints
PC15 Non-metal-surface treatment products
PC18 Ink and toners
PC21 Laboratory chemicals
PC23 Leather tanning, dye, finishing, impregnation and care products
PC24 Lubricants, greases, release products
PC28 Perfumes, fragrances
PC31 Polishes and wax blends
PC35 Washing and cleaning products (including solvent based products)
PC38 Welding and soldering products (with flux coatings or flux cores.), flux products
PC39 Cosmetics, personal care products
- **Process category**
PROC1 Use in closed process, no likelihood of exposure
PROC2 Use in closed, continuous process with occasional controlled exposure
PROC3 Use in closed batch process (synthesis or formulation)
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC7 Industrial spraying
PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring
PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15 Use as laboratory reagent
PROC17 Lubrication at high energy conditions and in partly open process
PROC18 Greasing at high energy conditions

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- PROC19 Hand-mixing with intimate contact and only PPE available
 PROC20 Heat and pressure transfer fluids in dispersive, professional use but closed systems
- **Environmental release category**
 - ERC1 Manufacture of substances
 - ERC2 Formulation of preparations
 - ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
 - ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)
 - ERC7 Industrial use of substances in closed systems
 - ERC8a Wide dispersive indoor use of processing aids in open systems
 - ERC8b Wide dispersive indoor use of reactive substances in open systems
 - ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
 - ERC8d Wide dispersive outdoor use of processing aids in open systems
 - ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
 - ERC9a Wide dispersive indoor use of substances in closed systems
 - ERC9b Wide dispersive outdoor use of substances in closed systems
 - **Application of the substance / the preparation**
 - The substance has many industrial, professional and consumer applications.

- **Details of the supplier of the safety data sheet**

- **Manufacturer/Supplier:**

Severn Biotech Ltd.
 Unit 2,
 Park Lane,
 Kidderminster,
 Worcestershire.
 DY11 6TJ
 UK
 Tel: 0044 1562 825286
 Fax: 0044 1562 825284
 email: info@severnbiotech.com

- **Further information obtainable from:** Product safety department.
- **Emergency telephone number:** Tel: 0044 1562 825286 (not 24 hours)

2 Hazards identification

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS05 corrosion

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.
 Skin Irrit. 2 H315 Causes skin irritation.
 STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

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- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

 Xn; Harmful

R22: Harmful if swallowed.

 Xi; Irritant

R37/38-41: Irritating to respiratory system and skin. Risk of serious damage to eyes.

R10-67: Flammable. Vapours may cause drowsiness and dizziness.

- **Information concerning particular hazards for human and environment:** Has a narcotizing effect.

- **Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

- **Hazard pictograms** GHS02, GHS05, GHS07

- **Signal word** Danger

- **Hazard statements**

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

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

- **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P270 Do not eat, drink or smoke when using this product.

P260 Do not breathe the mist/vapours/spray.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

- **Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Substances**

- **CAS No. Description**

71-36-3 butan-1-ol

- **Identification number(s)**

- **EC number:** 200-751-6

- **Index number:** 603-004-00-6

4 First aid measures

- **Description of first aid measures**

- **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

- **After inhalation:**

Supply fresh air; consult doctor in case of complaints.

In case of unconsciousness place patient stably in side position for transportation.

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- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.
- **After eye contact:**
DO NOT DELAY!
Check for and remove any contact lenses.
Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.
- **Information for doctor:**
The substance is irritating to the skin, and is severely irritating to the eyes. The vapour is irritating to the eyes and the respiratory tract. Exposure far above the WEL could cause lowering of consciousness. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.
Treat according to symptoms (decontamination, vital functions), no known specific antidote.
- **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**
Vapours are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
Above 29 degs. C explosive vapour/air mixtures may be formed.
Vapours can travel to a source of ignition and flash back.
- **Advice for firefighters**
- **Protective equipment:**
Wear fully protective suit.
Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.
- **Additional information** Cool endangered receptacles with water spray.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Keep ignition sources away - no smoking.
Ensure adequate ventilation
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Do not allow to penetrate the ground/soil.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Send for recovery or disposal in suitable receptacles.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Prevent formation of aerosols.
Ensure good ventilation/exhaustion at the workplace.
Avoid direct contact (skin contact, ingestion and/or inhalation of fume/mist/dust) with the product.
- **Information about fire - and explosion protection:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
If handled at 29 °C or above: use in a closed system; provide ventilation, and explosion-proof electrical equipment.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Prevent any seepage into the ground.
- **Information about storage in one common storage facility:**
Store away from oxidizing agents.
Do not store with aluminium.
- **Further information about storage conditions:**
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
Store in a banded area.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

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

Ingredients with limit values that require monitoring at the workplace:	
71-36-3 n-butanol	
WEL	Short-term value: 154 mg/m ³ , 50 ppm
	Sk

- **DNELs**

WORKERS

Long-term exposure - local effects

Inhalation DN(M)EL

- DNEL (Derived No Effect Level): 310 mg/m³

GENERAL POPULATION

Long-term exposure - systemic effects

Oral DN(M)EL

- DNEL (Derived No Effect Level): 3.125 mg/kg bw/day

Long-term exposure - local effects

Inhalation DN(M)EL

- DNEL (Derived No Effect Level): 55 mg/m³

- **PNECs**

PNEC aqua (freshwater): 0.082 mg/L

PNEC aqua (marine water): 0.0082 mg/L

PNEC aqua (intermittent releases): 2.25 mg/L

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PNEC STP: 2476 mg/L

PNEC sediment (freshwater): 0.178 mg/kg sediment dw

PNEC sediment (marine water): 0.0178 mg/kg sediment dw

PNEC soil: 0.015 mg/kg soil dw

· **Additional information:** The lists valid during the making were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

Select PPE appropriate for the operations taking place taking into account the product properties.

· **General protective and hygienic measures:**

Do not eat, drink, smoke or sniff while working.

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 eyes and skin.

Do not inhale gases / fumes / aerosols.

A safe system of work must be formulated and followed to ensure safe working with this product.

Relevant workers must receive suitable and sufficient training and supervision.

Take note of assigned Workplace Exposure Limits.

Ensure that eyewash stations and safety showers are close to the workstation location.

· **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.

Wear respiratory protection if ventilation is inadequate. Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

· **Protection of hands:**



Protective gloves

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

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.

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

- nitrile rubber (NBR) - 0.4 mm coating thickness

· **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

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

· **Body protection:**

Solvent resistant protective clothing

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Body protection must be chosen depending on activity and possible exposure.

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Fluid
Colour:	Colourless
· Odour:	Alcohol-like
· Odour threshold:	Not determined.

· pH-value (70 g/l) at 20 °C: 7

· Change in condition

Melting point/Melting range:	-20 °C
Boiling point/Boiling range:	119 °C

· Flash point: 35 °C

· Flammability (solid, gaseous): Not applicable.

· Ignition temperature: 355 °C

· Decomposition temperature: Not determined.

· Self-igniting: Not determined.

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

· Explosion limits:

Lower:	1.5 Vol %
Upper:	9.4 Vol %

· Vapour pressure at 20 °C: 10 hPa

· Density at 20 °C: 0.81 g/cm³

· Relative density: Not determined.

· Vapour density: Not determined.

· Evaporation rate: Not determined.

· Solubility in / Miscibility with water at 20 °C: 66 g/l

· Partition coefficient (n-octanol/water): 1 log POW

· Viscosity:

Dynamic at 20 °C:	2.95 mPas
Kinematic:	Not determined.

· Other information: No further relevant information available.

10 Stability and reactivity

· Reactivity

· Chemical stability

· Thermal decomposition / conditions to be avoided:

No decomposition if used and stored according to specifications.

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- **Possibility of hazardous reactions**
 Reacts with aluminium when heated to 100 °C.
 React with strong oxidants, such as chromium trioxide forming flammable/explosive gas (hydrogen).
 Attacks some forms of plastic, rubber and coatings
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:**
 Strong acids and oxidising agents
 Finely powdered metals.
 Aluminium
 Halogens
- **Hazardous decomposition products:** Carbon monoxide and carbon dioxide

11 Toxicological information

- **Information on toxicological effects**
- **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.
- **Subacute to chronic toxicity:** Effects of long-term or repeated exposure: The liquid defats the skin.
- **Additional toxicological information:**
 Routes of exposure: The substance can be absorbed into the body by inhalation of its vapour and by ingestion.
 Inhalation risk: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 degs. C.

Effects of short-term exposure: The substance is severely irritating to the eyes. The substance is irritating to the skin. The vapour is irritating to the eyes and respiratory tract. Exposure far above the WEL could cause lowering of consciousness. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

12 Ecological information

- **Toxicity**

· **Aquatic toxicity:**

EC50	1983 mg/kg (daphnia)
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- **Persistence and degradability** biodegradable
- **Behaviour in environmental systems:**
- **Bioaccumulative potential** Product is not expected to bioaccumulate.
- **Mobility in soil** No further relevant information available.
- **Additional 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.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**
Contact waste processors for recycling information.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Used, degraded or contaminated product may be classified as hazardous waste. Anyone classifying hazardous waste and determining its fate must be qualified in accordance with state and international legislation.
- **European waste catalogue**
Waste key numbers in accordance with the European Waste catalogue (EWC) are origin-referred defined. Since this product is used in several industries, no waste key can be provided by the supplier. The waste key number should be determined in arrangement with your waste disposal partner or the responsible authority.
- **Uncleaned packaging:**
- **Recommendation:**
Container remains hazardous when empty. Continue to observe all precautions.
Do not mix with other waste streams.
Containers, even those that are "empty," may contain residues that can develop flammable vapours upon heating. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

14 Transport information

- | | |
|--|---|
| · UN-Number | |
| · ADR, IMDG, IATA | UN1120 |
| · UN proper shipping name | |
| · ADR | 1120 BUTANOLS |
| · IMDG, IATA | BUTANOLS |
| · Transport hazard class(es) | |
| · ADR, IMDG, IATA | |
| |  |
| · Class | 3 Flammable liquids. |
| · Label | 3 |
| · Packing group | |
| · ADR, IMDG, IATA | III |
| · Environmental hazards: | |
| · Marine pollutant: | No |
| · Special precautions for user | Warning: Flammable liquids. |
| · Danger code (Kemler): | 30 |
| · EMS Number: | F-E,S-D |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |

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· Transport/Additional information:**· ADR**

- | | |
|---------------------------|-----|
| · Limited quantities (LQ) | 5L |
| · Transport category | 3 |
| · Tunnel restriction code | D/E |

- | | |
|--------------------------|--------------------------|
| · UN "Model Regulation": | UN1120, BUTANOLS, 3, III |
|--------------------------|--------------------------|

15 Regulatory information

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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.

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