

**Safety data sheet**  
according to 1907/2006/EC, Article 31






Version: 1

Revision: 13.04.2011

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

- **Product name:** **n-Butyraldehyde**
- **Product identifier**  
Butyraldehyde  
Cas No.: 123-72-8  
EC Number: 204-646-6
- **Registration number** 01-2119488889-07-0000
- **Relevant identified uses of the substance or mixture and uses advised against**  
Manufacture of substances
- **Professional use**  
Use:  
in laboratories
- **Application of the substance / the preparation** Intermediate for organic synthesis
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Perstorp Oxo AB  
SE-444 84 Stenungsund  
Sweden  
Tel. +46 303 728600  
Fax. +46 303 728607  
www.perstorp.com
- **Further information obtainable from:** Corporate EHSQ
- **Emergency telephone number:** (Int.) +46 8 337043 (Emergency Response Center, Sweden)

**2 Hazards identification**

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**  
 GHS02 flame  
Flam. Liq. 2 H225 Highly flammable liquid and vapour.
-  GHS07  
Eye Irrit. 2 H319 Causes serious eye irritation.
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**  
 F+; Highly flammable  
R11: Highly flammable.
- **Information concerning particular hazards for human and environment:**  
May cause eye irritation.
- **Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**  
   
GHS02 GHS07
- **Signal word** Danger
- **Hazard-determining components of labelling:**  
butyraldehyde

(Contd. on page 2)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**




(Contd. of page 1)

- **Hazard statements**  
 H225 Highly flammable liquid and vapour.  
 H319 Causes serious eye irritation.
- **Precautionary statements**  
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
 P243 Take precautionary measures against static discharge.  
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.  
 Rinse skin with water/shower.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P337+P313 If eye irritation persists: Get medical advice/attention.
- **Hazard description:**  
 The substance is a flammable liquid and may form explosive air/vapour mixtures.  
 May cause eye irritation.
- **Other hazards** Contaminated organic fibrous materials may catch fire in contact with air.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

**3 Composition/information on ingredients**

- **Chemical characterization: Substances** Yes.

· **Chemical components:**

CAS: 123-72-8	butyraldehyde	100%
EINECS: 204-646-6	 F R11	
Reg.nr.: 01-2119488889-07-0000	 Flam. Liq. 2, H225;  Eye Irrit. 2, H319	

- **Additional information:** For the wording of the listed risk phrases refer to section 16.

**4 First aid measures**

- **Description of first aid measures**
- **General information:**  
 Remove any clothing soiled by the product.  
 In case of unconsciousness place patient stably in side position for transportation.  
 First aid personnel should pay attention to their own safety.
- **After inhalation:**  
 Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
- **After skin contact:**  
 Immediately rinse with water.  
 Wash with water and soap and rinse thoroughly.
- **After eye contact:**  
 Rinse cautiously with tempered water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
- **After swallowing:**  
 Rinse mouth then drink plenty of water.  
 If a large quantity has been ingested or you feel unwell, get medical advice/attention.

**5 Firefighting measures**

- **Extinguishing media**
- **Suitable extinguishing agents:**  
 Alcohol resistant foam  
 Carbon dioxide

(Contd. on page 3)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 2)

Powder

- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**  
 When flames are extinguished, explosive re-ignition may occur.  
 Vapour is heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition.  
 By thermal decomposition the following may be produced:  
 Carbon monoxide (CO)  
 Carbon dioxide (CO<sub>2</sub>)
- **Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**  
 Collect contaminated fire fighting water separately. It must not enter the sewage system.  
 Cool down the containers/equipment exposed to heat with a water spray.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
 Handle only under strictly controlled conditions in accordance with Regulation (EC) No. 1907/2006, Art. 18 (4).  
 Switch off all sources of ignition. Ensure that no open flames exists in the affected area. No smoking.  
 Vapour is heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition.  
 Shelter from vapours by keeping upwind.  
 Keep unprotected persons away.  
 In case of major spill contact the rescue services.  
 For emergency responders:  
 Wear fully protective suit.  
 Wear full face mask with filter for organic substances.
- **Environmental precautions:**  
 Do not allow product to reach sewage system or any water course.  
 Inform respective authorities in case of seepage into water course or sewage system.
- **Methods and material for containment and cleaning up:**  
 Ensure adequate ventilation.  
 Keep ignition sources away - Do not smoke.  
 Use explosion-proof apparatus / fittings and spark-proof tools.  
 Small spill:  
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).  
 Large spill:  
 Pump up the product into a spare container suitably labelled.
- **Reference to other sections**  
 See Section 7 for information on safe handling.  
 See Section 8 for information on personal protection equipment.  
 See Section 13 for disposal information.

## 7 Handling and storage

- **Precautions for safe handling**  
 Handle only under strictly controlled conditions in accordance with Regulation (EC) No. 1907/2006, Art. 18 (4).
- **Information about fire - and explosion protection:**  
 Comply with Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres and,  
 Directive 1999/92/EC regarding minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres.  
 Keep ignition sources away - Do not smoke.

(Contd. on page 4)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 3)

Protect against electrostatic charges.

- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
 Store in a cool location.  
 Store under inert atmosphere, e.g. nitrogen pad.
- **Further information about storage conditions:** Keep container tightly sealed.
- **Specific end use(s)** Not applicable

## 8 Exposure controls/personal protection

- **Control parameters**  
 Handle only under strictly controlled conditions in accordance with Regulation (EC) No. 1907/2006, Art. 18 (4).
- **Ingredients with limit values that require monitoring at the workplace:**  
 The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **DNELs**  
 No DNEL values have been calculated since the product is an intermediate which must be handled according to strictly controlled conditions.
- **PNECs**  
 No PNEC values have been calculated since the product is an intermediate which must be handled according to strictly controlled conditions.
- **Additional information:**  
 Ensure that eyewash stations and safety showers are proximal to the work-station location.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
 Wash hands before breaks and at the end of work.  
 Do not inhale gases / fumes / aerosols.
- **Respiratory protection:**  
 Wear respiratory protection if ventilation is inadequate.  
 Suitable respiratory protection for lower concentrations or short-term exposure:  
 Gas filter for gases/vapours of organic compounds (boiling point <65 °C, e.g. EN 14387 Type AX)  
 Suitable respiratory protection for higher concentrations or long-term exposure:  
 Self-contained breathing apparatus.
- **Protection of hands:**



Protective gloves

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

- **Material of gloves**  
 Suitable materials also with prolonged, direct contact (protective index 6, corresponding > 480 minutes of permeation time according to EN 374):  
 Butyl rubber, BR  
 Recommended thickness of the material:  $\geq 0.7$  mm  
 The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

(Contd. on page 5)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 4)

· **Eye protection:**



Tightly sealed goggles

· **Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes).

· **Risk management measures**

Handle only under strictly controlled conditions in accordance with Regulation (EC) No. 1907/2006, Art. 18 (4).

**9 Physical and chemical properties**

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

**Form:** Liquid  
**Colour:** Colourless

· **Odour:** Pungent

· **Odour threshold:** <10 ppm

· **Change in condition**

**Melting point/Melting range:** <-20°C  
**Boiling point/Boiling range:** 75°C (OECD 103)

· **Flash point:** -7°C

· **Flammability (solid, gaseous):** Not applicable

· **Ignition temperature:** 190°C (ASTM E 659-78)

· **Danger of explosion:** The product is not explosive. However, formation of explosive air-vapour/dust mixtures are possible.

· **Explosion limits:**

**Lower:** 1.8 Vol %

**Upper:** 8 Vol %

· **Oxidizing properties** Not oxidizing.

· **Vapour pressure at 20°C:** 14.4 kPa (OECD 104)

· **Density at 20°C:** 0.81 g/cm<sup>3</sup> (ISO 2811-2)

· **Evaporation rate** Not determined

· **Solubility in / Miscibility with water at 20°C:** 50 g/l (OECD 105)

· **Partition coefficient (n-octanol/water):** 1.3 log POW (OECD 107)

· **Viscosity:**

**Dynamic at 20°C:** 0.43 mPas (ISO 3219)

**10 Stability and reactivity**

· **Reactivity**

The substance is an aldehyde and may undergo reversible addition reactions such as hydration and hemiacetal formation, acetal formation, enamine formation and cyanohydrin formation, and irreversible addition reactions such as reduction by complex metal hydrides and addition of organometallic reagents. The substance may as well undergo other carbonyl group reactions such

(Contd. on page 6)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 5)

as reduction and oxidation.

- **Chemical stability**

In contact with air/oxygen the product will slowly form peroxides.

The reaction is activated by light or catalyzed by salts of transition metals.

- **Possibility of hazardous reactions**

May produce violent reactions with bases and numerous organic substances including alcohols and amines.

n-Butyraldehyde reacts with oxygen and forms butyric acid.

Contaminated organic fibrous materials may catch fire in contact with air.

- **Conditions to avoid** Keep away from heat and direct sunlight.

- **Incompatible materials:**

Incompatible with strong oxidizing agents, strong bases, strong acids and strong reducing agents.

- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **LD/LC50 values:**

**123-72-8 butyraldehyde**

Oral	LD50	4160 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50/4h	>5.46 mg/l (rabbit)

- **Primary irritant effect:**

- **on the skin:**

Causes mild skin irritation.

(OECD 404)

- **on the eye:**

Causes serious eye irritation.

(EU Method B.5)

- **Inhalation:** At high concentrations, the vapours can be irritating to the respiratory system.

- **Sensitisation**

The substance has low potential for induction of dermal sensitisation in guinea pigs (OECD 406).

- **Repeated dose toxicity**

The effects of repeated oral administration and repeated inhalation exposure of the substance are primarily local and reflect the irritant nature of the substance. No evidence of systemic toxicity was seen in the mentioned studies.

**123-72-8 butyraldehyde**

Oral	LOAEL/90d	>75 mg/kg bw/d (rat)
Inhalative	NOAEC/90d	150 mg/m <sup>3</sup> (rat)

- **Carcinogenicity:** Not determined.

- **Mutagenicity:**

In vitro:

Not mutagenic in Bacterial Reverse Mutation Assay.

The substance is not clastogenic. Mammalian Chromosomal Aberration Test

The substance did induce sister chromatid exchange.

In vivo:

Some published studies in Drosophila report positive results; these are in contrast to negative results in a high quality study. A further study reports a negative result for the induction of micronuclei in mouse bone marrow. The weight of evidence therefore suggests that the substance is not genotoxic in vivo in mammalian systems.

- **Reproductive toxicity:**

No impairment of fertility has been observed.

No embryotoxic or teratogenic effects have been observed.

(Contd. on page 7)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 6)

**123-72-8 butyraldehyde**

Inhalative	NOAEC Development	12* mg/m <sup>3</sup> (rat)
	NOAEC Fertility	3560* mg/m <sup>3</sup> (rat)

· **Remark:** \* read-across from supporting substance (structural analogue)

## 12 Ecological information

- **Toxicity**

- **Aquatic toxicity:**

Harmful to aquatic organisms.

**123-72-8 butyraldehyde**

EC50/24h	380 mg/l (Daphnia magna)
EC50/8d	83 mg/l (Scenedesmus subspicatus)
LC50/14d	13.7 mg/l (Poecilia reticulata)
LC50/96h	25.8 mg/l (Pimephales promelas) (EPA-660/3-75-009)

- **Persistence and degradability**

The product is readily biodegradable.

**123-72-8 butyraldehyde**

BOD14d	100 % (bacteria) (OECD 301C)
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- **Behaviour in environmental systems:**

- **Bioaccumulative potential**

Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.

**123-72-8 butyraldehyde**

BCF	3.16 (-) (calc. EPIWIN)
log Pow	1.3 (-) (OECD 107)

- **Mobility in soil**

The substance does not adsorb to suspended solids and sediment based upon the Koc which indicates a high mobility in soil.

**123-72-8 butyraldehyde**

Koc	5-71 (-) (calc)
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- **Results of PBT and vPvB assessment**

- **PBT:** No.

- **vPvB:** No.

- **Other adverse effects** The substance may contribute the formation of ground level ozone.

## 13 Disposal considerations

- **Waste treatment methods**

The product is classified as hazardous waste and must be disposed of as such. Incinerate at a licensed installation.

- **European waste catalogue**

16 03 05*	organic wastes containing dangerous substances
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- **Uncleaned packaging:**

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

GB

(Contd. on page 8)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 7)

### 14 Transport information

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



- **ADR/RID class:** 3 Flammable liquids.
- **Hazard Identification number:** 33
- **UN Number :** 1129
- **Packing group :** II
- **Hazard label :** 3
- **Proper shipping name (Technical Name) :** BUTYRALDEHYDE
- **Limited quantities (LQ)** 1L
- **Tunnel restriction code :** D/E

· **Maritime transport IMDG:**



- **IMDG Class:** 3
- **UN Number:** 1129
- **Hazard label :** 3
- **Packing group:** II
- **EmS (Emergency schedule) :** F-E,S-D
- **Marine pollutant (environmentally hazardous mark) :** No
- **Proper shipping name (Technical Name) :** BUTYRALDEHYDE

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



- **ICAO/IATA Class:** 3
- **UN Number :** 1129
- **Hazard label :** 3
- **Packing group:** II
- **Proper shipping name (Technical Name) :** BUTYRALDEHYDE

### 15 Regulatory information

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

Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Commission Regulation No 10/2011 relating to plastic materials and articles intended to come into contact with food.

Commission Decision 96/335/EC establishing an inventory and a common nomenclature of ingredients employed in cosmetic products (INCI)

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

GB

(Contd. on page 9)



**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

13.04.2011

Version: 1

Revision: 13.04.2011

**Product name: n-Butyraldehyde**

(Contd. of page 8)

**16 Other information**

This Safety Data Sheet is not a Product Specification. It is based on our present knowledge and experience and it is intended to serve as a guide for safe handling of the product regarding to health and environmental aspects.

**· Relevant phrases**

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

R11 Highly flammable.

**· Department issuing SDS:** Corporate EHSQ Perstorp Holding AB**· \* Data compared to the previous version altered.**

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