

GPS Safety Summary

This Product Safety Summary is intended to provide a brief overview of the information on the risk assessment results of the chemical product that we manufacture based on the chemical industry's Global Product Strategy (GPS) to the general public as a social responsibility of a company that manufacture chemical substances.

This summary is not intended to provide technical information including effects on human health and the environment and details of risk assessment. In addition, it is not intended to be prepared as a document to replace a Safety Data Sheet (SDS) or a risk assessment report like a Chemical Safety Report under the REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) (REACH CSR). Although the summary is prepared based on the laws, materials, information and data that are available at the present moment, it does not provide any assurances.

SUBSTANCE NAME

n-Butylaldehyde (Butanal, CAS No. 123-72-8)

GENERAL STATEMENT


Normal Butylaldehyde (n- Butylaldehyde) is a colorless liquid with aldehyde odor. n-Butylaldehyde is used as an intermediate for a wide variety of compounds.

n-Butylaldehyde is highly flammable liquid and vapour, therefore it is important to keep away from heat, sparks, open flames or hot sources. n-Butylaldehyde causes skin irritation, causes serious eye irritation and may cause respiratory irritation.

Though n-Butylaldehyde is harmful to aquatic life, n-Butylaldehyde is biodegradable and low bioaccumulative.

It is recommended to wear appropriate protective masks, gloves when sampling for manufacturing. To minimize the adverse effects of n-Butylaldehyde on environmental organisms and control its release into the environment, the sewage equipment should be monitored regularly and the sewage treatment facility should be maintained and inspected in the factory.

CHEMICAL IDENTITY

Item	Contents
Generic name	Normal Butylaldehyde (n- Butylaldehyde)
Trade name	Normal Butylaldehyde (n- Butylaldehyde)
Chemical name	Butanal (IUPAC name: Butanal)
CAS No.	123-72-8
Other numbers	Reference No. listed in the official gazettes (Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Industrial Safety and Health Act) (2)-494 EC No. 204-646-6
Molecular formula	C ₄ H ₈ O
Structural formula	
Other information	None in particular

USES AND APPLICATIONS

Intended uses of our product Intermediates for a wide variety of compounds

PHYSICAL/CHEMICAL PROPERTIES

Appearance (physical state)	Liquid
Color	Colorless
Odor	Aldehyde odor
Specific gravity (relative density)	None
Melting point/boiling point	-99°C/ 74.8°C (101300 Pa)
Combustibility/flammability	highly flammable liquid (Category 2)
Flash point	-6.67 °C
Limit of combustion or explosion	2.5 – 12.5 vol %
Auto ignition temperature	230 °C
Vapor pressure	11700 Pa (20°C)
Molecular weight	72.1
Water solubility	7.1 wt% (25°C)
Octanol-water partition coefficient	LogKow : 0.88

HEALTH EFFECTS

Effect assessment	Results (GHS ^{*1} hazard classification)
Acute toxicity (oral ingestion)	Not classified ^{*2}
Acute toxicity (inhalation)	Not classified (gas) Classification not possible ^{*3} (vapor) Classification not possible (dust/mist)
Acute toxicity (dermal)	Not classified
Skin corrosion/irritation	Causes skin irritation (Category 2)
Serious eye damage/eye irritation	Causes serious eye irritation (Category 2A)
Respiratory sensitization	Classification not possible
Skin sensitization	Classification not possible
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive toxicity	Classification not possible
Specific target organ toxicity (Single exposure)	May cause respiratory irritation (Category 3, Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Classification not possible
Aspiration hazard	Classification not possible
Source/remarks	

^{*1} GHS: Globally Harmonized System of Classification and Labelling of Chemicals. This system enables us to classify chemicals by hazard type and degree according to globally harmonized rules.

^{*2} Not classified: Hazardousness much lower than the lowest hazard class specified by GHS

^{*3} Classification not possible: The data needed for judging classification are not available at all or sufficient data are not collected for classification.

^{*4} Not applicable: Because the physical properties defined by GHS are not met, the

chemical is not included in the target chemicals of the classification.

ENVIRONMENTAL EFFECTS

Effect assessment	Results (GHS hazard classification)
Hazardous to the aquatic environment (acute)	Harmful to aquatic life (Category 3)
Hazardous to the aquatic environment (chronic)	Not applicable ^{*4}
Environmental fate/dynamics	Results
Transfer in the environment	Low volatility from water and low soil absorption
Biodegradability	Readily biodegradable
Bioaccumulation	Low bioaccumulative potential
Conclusion of PBT/vPvB	Not judged to be PBT [*] and vPvB ^{**} . [*] PBT: Persistent, bioaccumulative and toxic (Remaining in the environment and having high bioaccumulative and strong toxic properties) ^{**} vPvB: very Persistent and very Bioaccumulative (Readily remaining in the environment and having very high bioaccumulative property)

EXPOSURE

Details	No.	Potential exposure in the process of use of our products (exposure route)
Occupational Exposure	1-1	During operations in closed, continuous process with controlled exposure, workers may be exposed to substances by skin contact or inhalation, e.g. through maintenance, sampling and equipment breakages. During transfer of substances or preparations from/to vessels or large containers in dedicated facilities, workers may be exposed to substances by skin contact or inhalation.
Consumer exposure	2-1	This material is not used by consumers and therefore the potential for consumer exposure is extremely low.
Environmental exposure	3-1	Used as intermediates for the manufacture of other substances and may be released primarily into the air and water environment. However n-Butylaldehyde is manufactured in a closed system process with controlled exposure, the possibility of environment release is very low. It is liquid at normal temperature and normal pressure. In the case of environmental release, though it is considered to disperse into water, it is expected to be degradable in water rapidly.
Note		If there is a potential for exposure in other uses, take appropriate measures in reference to the risk management recommends.

RISK MANAGEMENT RECOMMENDATIONS

Details	No.	Management recommendations based on our risk assessment results
Occupational Exposure	1-1	Wear appropriate protective masks, clothing and gloves made of materials that n-Butylaldehyde does not penetrate during sampling operation and transfer of substance. The operation manager instructs workers how to select and use the

Consumer exposure	2-1	appropriate protective equipment and how to manage the work place. None
Environmental exposure	3-1	n-Butyraldehyde may affect environment if leaked. Take measures to prevent leakage, and take due care in daily management and handling.
Other warnings		None
Note		For the measures and actions to be taken for regular handling, emergency situations, disposal and transportation, see Section 4, 5, 6, 7, 8, 13 and 14, SDS issued by Mitsubishi Chemical Corporation.

STATE AGENCY REVIEW

Assessment document	Review condition
OECD HPV	http://webnet.oecd.org/HPV/UI/handler.axd?id=565191e0-89aa-47b0-b271-1a2559b71879
National Institute of Evaluation and Technology (NITE) - Preliminary Risk Assessment of Chemical Substances	None
Ministry of Environment - Preliminary Environment Risk Assessment of Chemical Substances	http://www.env.go.jp/chemi/report/h22-01/pdf/chpt2/2-2-2-45.pdf
REACH	http://apps.echa.europa.eu/registered/registered-sub.aspx

REGULATORY INFORMATION / LABELLING INFORMATION

Main regulatory information

Law	Regulatory condition
UN class	3
UN No.	1129
Packing group	II
Fire Service Act	Hazardous Material Class 4, Class 1 Petroleum, water insoluble liquid, Hazard Class II
Ship Safety Act	Hazardous Substance List, Separate Table 1 Flammable Liquids
Poisonous and Deleterious Substances Control Act	None
Industrial Safety and Health Act	Enforcement Order, Appended Table 1, Dangerous Substances (4) Inflammable Substances Circular notice, Industrial and safety standard (341, mutagenic substances)
Pollutant Release Transfer Register	None
Civil Aeronautics Act	Substances Approved for Transportation, 3. Flammable Liquids
Others	Act on Port Regulations: Ordinance for Enforcement Article 12, Hazardous Substance List, Flammable Liquids

Act for the Prevention of Marine Pollution and Maritime Disasters:
Marine Pollutants in the Case of Bulk Transportation (Class Y)
Offensive Odor Control Law: Ordinance for Enforcement Article 1,
Specific offensive odor substance

Labelling information

Pictograms or symbols



Signal Word

Danger

Hazard statement

- Highly flammable liquid and vapour
- Causes skin irritation
- Causes serious eye irritation
- May cause respiratory irritation
- Harmful to aquatic life

CONTACT INFORMATION WITHIN COMPANY

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