# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 8.7
Revision Date 26.11.2023
Print Date 17.12.2023

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

| | | |
|---|---|---|
| Product name | : | n-Butyl vinyl ether (stabilised with 100 ppm KOH) for synthesis |
| Product Number | : | 8.01847 |
| Catalogue No. | : | 801847 |
| Brand | : | Millipore |
| REACH No. | : | This product is a mixture. REACH Registration Number see section 3. |
| CAS-No. | : | 111-34-2 |

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

| | | |
|---|---|---|
| Identified uses | : | Chemical for synthesis |
| Uses advised against | : | For R&D use only. Not for pharmaceutical, household or other uses. |

### 1.3 Details of the supplier of the safety data sheet

| | | |
|---|---|---|
| Company | : | Sigma-Aldrich Ireland Limited<br>Vale Road<br>Arklow<br>CO WICKLOW<br>CO WICKLOW<br>IRELAND |
| Telephone | : | +353 402-20300 |
| E-mail address | : | TechnicalService@merckgroup.com |

### 1.4 Emergency telephone

| | | |
|---|---|---|
| Emergency Phone # | : | +(353)-19014670 (CHEMTREC) |

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**
Flammable liquids (Category 2), H225
Skin irritation (Category 2), H315
Skin sensitization (Category 1), H317



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For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

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

Pictogram

| | |
|---|---|
| Signal Word | Danger |
| Hazard Statements | |
| H225 | Highly flammable liquid and vapor. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| Precautionary Statements | |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground and bond container and receiving equipment. |
| P241 | Use explosion-proof electrical/ ventilating/ lighting/ equipment. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. |
| Supplemental Hazard information (EU) | |
| EUH019 | May form explosive peroxides. |

**Reduced Labeling (<= 125 ml)**

Pictogram

| | |
|---|---|
| Signal Word | Danger |
| Hazard Statements | |
| H317 | May cause an allergic skin reaction. |
| Precautionary Statements | none |
| Supplemental Hazard information (EU) | |
| EUH019 | May form explosive peroxides. |

## 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.



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## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Formula : C6H12O
Molecular weight : 100.16 g/mol

| Component | | Classification | Concentration |
|---|---|---|---|
| **butyl vinyl ether** | | | |
| CAS-No.<br>EC-No. | 111-34-2<br>203-860-7<br><br>* | Flam. Liq. 2; Skin Irrit. 2; Skin Sens. 1B; H225, H315, H317 | <= 100 % |

*A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

**General advice**
Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Remove contact lenses.

**If swallowed**
After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**
Carbon dioxide (CO2) Foam Dry powder



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**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.

### 5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### 5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

### 6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

### 6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb® ).
Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections
For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

**Advice on protection against fire and explosion**
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

**Hygiene measures**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

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

**Storage conditions**
Protected from light.Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.



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Recommended storage temperature see product label.

**Storage class**
Storage class (TRGS 510): 3: Flammable liquids

### 7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Ingredients with workplace control parameters**
Contains no substances with occupational exposure limit values.

### 8.2 Exposure controls

**Personal protective equipment**

**Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

**Skin protection**
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

**Body Protection**
Flame retardant antistatic protective clothing.

**Respiratory protection**
Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.



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**Control of environmental exposure**
Do not let product enter drains. Risk of explosion.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| a) | Physical state | liquid |
| b) | Color | colorless |
| c) | Odor | No data available |
| d) | Melting point/freezing point | Melting point/range: -92 °C |
| e) | Initial boiling point and boiling range | 94 °C |
| f) | Flammability (solid, gas) | No data available |
| g) | Upper/lower flammability or explosive limits | No data available |
| h) | Flash point | -12 °C - closed cup |
| i) | Autoignition temperature | 190 °C<br>at 1,013 hPa - DIN 51794 |
| j) | Decomposition temperature | No data available |
| k) | pH | No data available |
| l) | Viscosity | Viscosity, kinematic: 0.57 mm2/s at 20 °C - OECD Test Guideline 1140.45 mm2/s at 40 °C - OECD Test Guideline 114<br><br>Viscosity, dynamic: 0.44 mPa.s at 20 °C - OECD Test Guideline 1140.34 mPa.s at 40 °C - OECD Test Guideline 114 |
| m) | Water solubility | 0.46 g/l at 20 °C - OECD Test Guideline 105 |
| n) | Partition coefficient: n-octanol/water | log Pow: 2.9 at 22 °C - OECD Test Guideline 117 - Bioaccumulation is not expected. |
| o) | Vapor pressure | 53.65 hPa at 20 °C - OECD Test Guideline 104 |
| p) | Density | 0.78 g/cm3 at 20 °C |
| | Relative density | No data available |
| q) | Relative vapor density | No data available |
| r) | Particle characteristics | No data available |
| s) | Explosive properties | No data available |



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t) Oxidizing properties none

### 9.2 Other safety information

| | |
|---|---|
| Relative vapor density | 3.46 |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity
Formation of peroxides possible.
Vapors may form explosive mixture with air.

### 10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .
Contains the following stabilizer(s):
caustic potash (0.01 %)

### 10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents
aluminium chloride
boron trifluoride
iodine
polymerisation initiators

### 10.4 Conditions to avoid
Warming.
Moisture.

### 10.5 Incompatible materials
No data available

### 10.6 Hazardous decomposition products
Peroxides
In the event of fire: see section 5

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Mixture**

**Acute toxicity**
LD50 Oral - Rat - male - 10,300 mg/kg
(OECD Test Guideline 401)
Symptoms: mucosal irritations, Inhalation may lead to the formation of oedemas in the respiratory tract.
LC50 Inhalation - Rat - male and female - 4 h - > 33.3 mg/l - vapor



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(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male - 3,300 mg/kg
(OECD Test Guideline 402)

**Skin corrosion/irritation**
Remarks: Mixture causes skin irritation.
Skin - Rabbit
Result: Irritations - 4 h
(OECD Test Guideline 404)
Remarks: Drying-out effect resulting in rough and chapped skin.
Dermatitis

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Mixture may cause an allergic skin reaction.
Local lymph node assay (LLNA) - Mouse
Result: positive
(OECD Test Guideline 429)

**Germ cell mutagenicity**
Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

**Carcinogenicity**
No data available

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### 11.2 Additional Information

**Endocrine disrupting properties**

**Product:**

| | |
|---|---|
| Assessment | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |

prolonged or repeated exposure can cause:, narcosis

Other dangerous properties can not be excluded.



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Handle in accordance with good industrial hygiene and safety practice.

Systemic effects:

After absorption of large quantities:

In high concentrations:

Circulatory collapse
narcosis

After absorption:

Cough
Headache
Dizziness
Unconsciousness

Absorption can result in damage to:

Liver
Kidney

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

**Components**

**butyl vinyl ether**

**Acute toxicity**
LD50 Oral - Rat - male - 10,300 mg/kg
(OECD Test Guideline 401)
Symptoms: mucosal irritations, Inhalation may lead to the formation of oedemas in the respiratory tract.
LC50 Inhalation - Rat - male and female - 4 h - > 33.3 mg/l - vapor
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male - 3,300 mg/kg
(OECD Test Guideline 402)

**Skin corrosion/irritation**
Skin - Rabbit
Result: Irritations - 4 h
(OECD Test Guideline 404)
Remarks: Drying-out effect resulting in rough and chapped skin.
Dermatitis

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation



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(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Local lymph node assay (LLNA) - Mouse
Result: positive
(OECD Test Guideline 429)

**Germ cell mutagenicity**
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative

**Carcinogenicity**
No data available

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
Acute inhalation toxicity - mucosal irritations, Inhalation may lead to the formation of oedemas in the respiratory tract.

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

**Mixture**

| | |
|---|---|
| Toxicity to fish | static test LC50 - Danio rerio (zebra fish) - > 1,000 mg/l - 96 h<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic invertebrates | semi-static test EC50 - Daphnia magna (Water flea) - > 27.9 mg/l - 48 h<br>(OECD Test Guideline 202) |
| Toxicity to algae | static test ErC50 - Pseudokirchneriella subcapitata (algae) - 19.8 mg/l - 72 h<br>(OECD Test Guideline 201) |
| | static test EC10 - Pseudokirchneriella subcapitata (algae) - 5.92 mg/l - 72 h<br>(OECD Test Guideline 201) |
| Toxicity to bacteria | static test EC50 - Pseudomonas putida - > 8,000 mg/l - 16 h<br>(DIN 38421 TEIL 8) |

### 12.2 Persistence and degradability

| | |
|---|---|
| Biodegradability | aerobic - Exposure time 28 d<br>Result: 83 % - Readily biodegradable.<br>(OECD Test Guideline 310) |

### 12.3 Bioaccumulative potential

No data available



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### 12.4 Mobility in soil
No data available

### 12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 12.6 Endocrine disrupting properties
**Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects
No data available

**Components**

**butyl vinyl ether**

| | |
|---|---|
| Toxicity to fish | static test LC50 - Danio rerio (zebra fish) - > 1,000 mg/l - 96 h<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic invertebrates | semi-static test EC50 - Daphnia magna (Water flea) - > 27.9 mg/l - 48 h<br>(OECD Test Guideline 202) |
| Toxicity to algae | static test ErC50 - Pseudokirchneriella subcapitata (algae) - 19.8 mg/l - 72 h<br>(OECD Test Guideline 201) |
| | static test EC10 - Pseudokirchneriella subcapitata (algae) - 5.92 mg/l - 72 h<br>(OECD Test Guideline 201) |
| Toxicity to bacteria | static test EC50 - Pseudomonas putida - > 8,000 mg/l - 16 h<br>(DIN 38421 TEIL 8) |

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

**Product**

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions. Notice Directive on waste 2008/98/EC.



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## SECTION 14: Transport information

**14.1 UN number**

ADR/RID: 2352 IMDG: 2352 IATA: 2352

**14.2 UN proper shipping name**

ADR/RID: BUTYL VINYL ETHER, STABILIZED
IMDG: BUTYL VINYL ETHER, STABILIZED
IATA: Butyl vinyl ether, stabilized

**14.3 Transport hazard class(es)**

ADR/RID: 3 IMDG: 3 IATA: 3

**14.4 Packaging group**

ADR/RID: II IMDG: II IATA: II

**14.5 Environmental hazards**

ADR/RID: no IMDG Marine pollutant: no IATA: no

**14.6 Special precautions for user**

Tunnel restriction code : (D/E)

Further information : No data available

## SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**National legislation**

| | | |
|---|---|---|
| Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. | P5c | FLAMMABLE LIQUIDS |

**Other regulations**

Take note of Dir 94/33/EC on the protection of young people at work.

**15.2 Chemical Safety Assessment**

For this product a chemical safety assessment was not carried out

## SECTION 16: Other information

**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|---|---|
| EUH019 | May form explosive peroxides. |
| H225 | Highly flammable liquid and vapor. |
| H315 | Causes skin irritation. |
| H317 | Highly flammable liquid and vapor. |



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**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

| **Classification of the mixture** | | **Classification procedure:** |
|---|---|---|
| Flam. Liq.2 | H225 | Based on product data or assessment |
| Skin Irrit.2 | H315 | Calculation method |
| Skin Sens.1 | H317 | Calculation method |

**Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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