



# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 05/19/2014

Version 1.0

## SECTION 1. Identification

### Product identifier

Product number	BX1795
Product name	<i>sec</i> -Butyl Alcohol
CAS-No.	78-92-2

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

Identified uses	Reagent for analysis
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### Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation   290 Concord Road, Billerica, MA 01821, United States of America   General Inquiries: +1-978-715-4321   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Flammable liquid, Category 3, H226  
Eye irritation, Category 2, H319  
Specific target organ systemic toxicity - single exposure, Category 3, H335  
Specific target organ systemic toxicity - single exposure, Category 3, H336  
For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

#### Hazard pictograms



Signal Word  
Warning

#### Hazard Statements

H226 Flammable liquid and vapor.  
H319 Causes serious eye irritation.

# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BX1795  
Product name *sec*-Butyl Alcohol

Version 1.0

H335 + H336 May cause respiratory irritation, and drowsiness or dizziness.

### *Precautionary Statements*

P210 Keep away from heat.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

### OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS and may deviate from the GHS information.

### Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

Formula	CH <sub>3</sub> CH(OH)CH <sub>2</sub> CH <sub>3</sub>	C <sub>4</sub> H <sub>10</sub> O (Hill)
Molar mass	74.12 g/mol	

### Hazardous ingredients

*Chemical Name (Concentration)*

CAS-No.

*butan-2-ol (>= 90 % - <= 100 % )*

78-92-2

Exact percentages are being withheld as a trade secret.

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## SECTION 4. First aid measures

### Description of first-aid measures

#### *Inhalation*

After inhalation: fresh air. Consult doctor if feeling unwell.

#### *Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing.

#### *Eye contact*

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

#### *Ingestion*

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately. Subsequently administer: activated charcoal (20 - 40 g in 10% slurry). Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

Never give anything by mouth to an unconscious person.

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

irritant effects, Cough, Shortness of breath, narcosis, drowsiness, CNS disorders, Dizziness

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

Gastric lavage.

## SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BX1795

Version 1.0

Product name

*sec*-Butyl Alcohol

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### SECTION 5. Fire-fighting measures

#### Extinguishing media

*Suitable extinguishing media*

Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

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

#### Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

#### Advice for firefighters

*Special protective equipment for fire-fighters*

In the event of fire, wear self-contained breathing apparatus.

*Further information*

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

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### SECTION 6. Accidental release measures

#### 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.

Advice for emergency responders: Protective equipment see section 8.

#### Environmental precautions

Do not empty into drains. Risk of explosion.

#### 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. Chemisorb®). Dispose of properly. Clean up affected area.

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### SECTION 7. Handling and storage

#### Precautions for safe handling

Observe label precautions.

*Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

*Requirements for storage areas and containers*

Do not use light-weight-metal containers.

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# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BX1795  
Product name *sec*-Butyl Alcohol

Version 1.0

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store at room temperature.

## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

#### *Ingredients*

Basis	Value	Threshold limits	Remarks
<i>butan-2-ol 78-92-2</i>			
ACGIH	Time Weighted Average (TWA):	100 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	100 ppm 305 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	150 ppm 455 mg/m <sup>3</sup>	
OSHA_TRANS	PEL:	150 ppm 450 mg/m <sup>3</sup>	
Z1A	Time Weighted Average (TWA):	100 ppm 305 mg/m <sup>3</sup>	

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

### *Hygiene measures*

Change contaminated clothing. Application of skin- protective barrier cream recommended. Wash hands after working with substance.

### *Eye/face protection*

Safety glasses

### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

### *Other protective equipment:*

Flame retardant antistatic protective clothing

### *Respiratory protection*

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number  
Product name

BX1795  
*sec*-Butyl Alcohol

Version 1.0

---

## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	alcohol-like
Odor Threshold	No information available.
pH	at 68 °F (20 °C) neutral
Melting point	-115 °C
Boiling point/boiling range	210 - 216 °F (99 - 102 °C) at 1,013 hPa
Flash point	75 °F (24 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.4 %(V)
Upper explosion limit	9.8 %(V)
Vapor pressure	16.5 hPa at 68 °F (20 °C)
Relative vapor density	2.6
Density	0.81 g/cm <sup>3</sup> at 68 °F (20 °C)
Relative density	No information available.
Water solubility	125 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 0.61 (experimental) (Lit.) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	No information available.

## SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number  
Product name

BX1795  
*sec*-Butyl Alcohol

Version 1.0

---

Viscosity, dynamic	4.21 mPa.s at 68 °F (20 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	734 °F (390 °C) Method: DIN 51794

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### SECTION 10. Stability and reactivity

#### Reactivity

Vapor/air-mixtures are explosive at intense warming.

#### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

#### Possibility of hazardous reactions

Exothermic reaction with:

Alkali metals, Alkaline earth metals, Strong oxidizing agents, strong reducing agents, Aluminum, acid halides, chromium(VI) oxide

#### Conditions to avoid

Heating.

#### Incompatible materials

Aluminum, rubber, various plastics

#### Hazardous decomposition products

no information available

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### SECTION 11. Toxicological information

#### Information on toxicological effects

##### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

##### *Target Organs*

Eyes

Skin

Respiratory system

Central nervous system

##### *Acute oral toxicity*

LD50 rat: 6,480 mg/kg

OECD Test Guideline 401

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

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SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BX1795  
Product name *sec*-Butyl Alcohol

Version 1.0

*Acute inhalation toxicity*

LC50 rat: 48.5 mg/l; 4 h (RTECS)

Irritating to respiratory system.

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

*Acute dermal toxicity*

LD50 rat: > 2,000 mg/kg  
(RTECS)

*Skin irritation*

rabbit

Result: No skin irritation  
(IUCLID)

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

*Eye irritation*

rabbit

Result: Eye irritation  
(IUCLID)

Causes serious eye irritation.

*Genotoxicity in vitro*

Ames test

Result: negative

Method: OECD Test Guideline 471

*Specific target organ systemic toxicity - single exposure*

May cause respiratory irritation.

May cause drowsiness or dizziness.

*Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

*Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential

## SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BX1795  
Product name *sec*-Butyl Alcohol

Version 1.0

carcinogen by ACGIH.

### Further information

After absorption of large quantities:

Systemic effects:

CNS disorders, narcosis

Handle in accordance with good industrial hygiene and safety practice.

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## SECTION 12. Ecological information

### Ecotoxicity

#### *Toxicity to fish*

LC50 *Pimephales promelas* (fathead minnow): 3,670 mg/l; 96 h (ECOTOX Database)

#### *Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia magna* (Water flea): 4,227 mg/l; 48 h (ECOTOX Database)

### Persistence and degradability

#### *Biodegradability*

98 %; 5 d

(External MSDS)

Readily biodegradable.

#### *Biochemical Oxygen Demand (BOD)*

1,870 mg/g (5 d)

(IUCLID)

#### *Chemical Oxygen Demand (COD)*

2,470 mg/g

(IUCLID)

### Bioaccumulative potential

#### *Partition coefficient: n-octanol/water*

log Pow: 0.61

(experimental)

(Lit.) Bioaccumulation is not expected.

### Mobility in soil

No information available.

#### *Additional ecological information*

No interference with wastewater treatment plants are to be expected when used properly.

Discharge into the environment must be avoided.

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## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number BX1795  
Product name *sec*-Butyl Alcohol

Version 1.0

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**SECTION 14. Transport information**

**Land transport (DOT)**

UN number UN 1120  
Proper shipping name BUTANOLS  
Class 3  
Packing group III  
Environmentally hazardous --

**Air transport (IATA)**

UN number UN 1120  
Proper shipping name BUTANOLS  
Class 3  
Packing group III  
Environmentally hazardous --  
Special precautions for user no

**Sea transport (IMDG)**

UN number UN 1120  
Proper shipping name BUTANOLS  
Class 3  
Packing group III  
Environmentally hazardous --  
Special precautions for user yes  
EmS F-E S-D

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**SECTION 15. Regulatory information**

**United States of America**

**OSHA Hazards**

Flammable Liquid  
Eye irritant  
Respiratory irritant  
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

**SARA 311/312 Hazards**

Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

**SARA 313**

The following components are subject to reporting levels established by SARA Title III, Section 313:

*Ingredients*  
butan-2-ol 78-92-2 100 %

# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number  
Product name

BX1795  
*sec*-Butyl Alcohol

Version 1.0

---

## SARA 302

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

## DEA List I

Not listed

## DEA List II

Not listed

## US State Regulations

### Massachusetts Right To Know

#### *Ingredients*

butan-2-ol

### Pennsylvania Right To Know

#### *Ingredients*

butan-2-ol

### New Jersey Right To Know

#### *Ingredients*

butan-2-ol

### California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

## Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

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## SECTION 16. Other information

### Training advice

Provide adequate information, instruction and training for operators.

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

H226	Flammable liquid and vapor.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

### Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

BX1795

Version 1.0

Product name

*sec*-Butyl Alcohol

---

Date of issue: 05/19/2014

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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