

# SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

## 1. Identification

**Product identifier:** N-BUTYL CHLORIDE

### Other means of identification

**CAS Number:** 109-69-3

### Recommended restrictions

**Recommended use:** Preliminary / intermediate product for organic syntheses Organic intermediate/s

**Restrictions on use:** Not known.

### Manufacturer/Importer/Distributor Information

Company Name : Evonik Corporation  
Nutrition & Care  
PO Box 34628  
Richmond, VA 23234  
USA

Telephone : +1 804 727 0700

Fax : +1 804 727 0845

E-mail : us-productsafety-cs@evonik.com

### Emergency telephone number:

24-Hour Health : +1 800 424 9300 (CHEMTREC - US & CANADA)  
Emergency 800 681 9531 (CHEMTREC MEXICO)  
+1 703 527 3887 (CHEMTREC WORLD)

## 2. Hazard(s) identification

### Hazard Classification

#### Physical Hazards

Flammable liquids Category 2

#### Health Hazards

Aspiration Hazard Category 1

### Environmental Hazards

Acute hazards to the aquatic environment Category 3

Chronic hazards to the aquatic environment Category 3

### Label Elements

**Hazard Symbol:**



<b>Signal Word:</b>	Danger
<b>Hazard Statement:</b>	Highly flammable liquid and vapor. May be fatal if swallowed and enters airways. Harmful to aquatic life with long lasting effects.
<b>Precautionary Statements</b>	
<b>Prevention:</b>	Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting/...] equipment. Use non-sparking tools. Take precautionary measures against static discharge. Avoid release to the environment. Wear protective gloves/eye protection/face protection.
<b>Response:</b>	IF SWALLOWED: Immediately call a POISON CENTER/doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Do NOT induce vomiting. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
<b>Storage:</b>	Store in a well-ventilated place. Keep cool. Store locked up.
<b>Disposal:</b>	Dispose of contents/ container to an approved waste disposal plant.
<b>Hazard(s) not otherwise classified (HNOC):</b>	None.

### 3. Composition/information on ingredients

#### Substances

Chemical Identity	CAS number	Content in percent (%) <sup>*</sup>
1-chlorobutane	109-69-3	>=80 - <=100%

<sup>\*</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

### 4. First-aid measures

#### Description of necessary first-aid measures

<b>General information:</b>	Pay attention to self-protection. Remove victims from hazardous area. Immediately remove soiled or soaked clothing and remove it to a safe distance. Keep victim warm, in a stabilized position and covered. Do not leave victims unattended. If the casualty is unconscious: Place the victim in the recovery position.
-----------------------------	--

<b>Inhalation:</b>	Potential for exposure by inhalation if aerosols or mists are generated. Move victims into fresh air. With labored breathing: Provide with oxygen. Consult a doctor. If the casualty is not breathing: Perform mouth-to-mouth resuscitation, notify emergency physician immediately.
<b>Skin Contact:</b>	Wash off affected area immediately with plenty of water. Continue decontamination with polyethylene glycol 400 after initial rinsing with water and then wash with water and soap. If symptoms persist, consult a physician for treatment.
<b>Eye contact:</b>	With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes. Consult an ophthalmologist immediately if the symptoms persist.
<b>Ingestion:</b>	Rinse mouth. Immediately give large quantities of water to drink. Obtain medical attention.
<b>Personal Protection for First-aid Responders:</b>	As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear. Wear suitable protective clothing.

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

<b>Symptoms:</b>	daze, Headache, vertigo, somnolence (sleepiness), nausea. May cause lung damage if swallowed. Health injuries may be delayed.
<b>Hazards:</b>	Harmful in contact with skin and if swallowed. Vapours may cause drowsiness and dizziness.

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

<b>Treatment:</b>	After accidental absorption in the body, the pathology and clinical findings are dependent on the kinetics of the noxious substance (quantity of absorbed substance, the absorption time, and the effectiveness of early elimination measures (first aid)/ excretion - metabolism). Continue with first aid measures. Depending on the pathology and clinical findings, patient monitoring and symptomatic treatment are necessary.
-------------------	---

<b>5. Fire-fighting measures</b>
----------------------------------

#### Suitable (and unsuitable) extinguishing media

<b>Suitable extinguishing media:</b>	Water spray, foam, CO <sub>2</sub> , dry powder.
<b>Unsuitable extinguishing media:</b>	high volume water jet

<b>Specific hazards arising from the chemical:</b>	In case of fire cool endangered containers with water. Hazardous fumes in fires, specific to the product: Hydrogen chloride. Under certain fire conditions, traces of other toxic products may occur. Flammable liquid. Vapors can travel to a source of ignition and flash back. Explosive mixtures may occur at temperatures at or above the flashpoint.
--	--

#### Special protective equipment and precautions for firefighters

<b>Special fire fighting procedures:</b>	Water for fire fighting must not be introduced in the sewer system, subsoil, or surface waters. Assure that there are sufficient fire water retaining facilities Contaminated fire fighting water must be disposed of in conformity with the regulations of the local authorities. Fire residues should be disposed of in accordance with the regulations.
--	--

**Special protective equipment for fire-fighters:** As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear. Wear suitable protective clothing.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Ensure adequate ventilation. Keep away from sources of ignition - No smoking. Do not allow to enter drains (danger of explosion).

**Accidental release measures:** Remove sources of ignition and ventilate area. Run off may create fire or explosion hazard in sewer. Assure sufficient ventilation.

**Methods and material for containment and cleaning up:** Take up mechanically or with a non-combustible absorbent material. Suitable absorbents: universal absorbent Fill into marked, sealable containers.

**Environmental Precautions:** Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, rivers, groundwater or soil.

## 7. Handling and storage

### Handling

**Technical measures (e.g. Local and general ventilation):** The substance must be handled under strictly controlled conditions in accordance with Article 17/18 of the REACH regulation. Refill and handle product only in closed system. Leak detection recommended Do not add wastewater to a biological wastewater treatment plant Dispose of waste gases in a suitable incineration plant. Minimization of emissions by means of suitable technical measures such as flanges and valves with low leakage rates, recirculation of vapours. All precautionary measures indicated have to be observed.

**Safe handling advice:** Avoid residues of the product on the containers. Provide good ventilation or extraction. Use permissible in closed systems only. Handle and transfer product in closed systems only (gas displacement device). Ensure that apparatus and pipelines are free from leaks. Do not ventilate into the open. Suitable loading and unloading device required. Risk assessment and risk monitoring of all work places required. All precautionary measures indicated have to be observed. Handle in accordance with good industrial hygiene and safety practice. Health, Safety and Emergency Management System recommended. Regular safety training is a must. Keep away from heat, sparks, flames and other sources of ignition. Keep container tightly closed. Use only with adequate ventilation.  
 Vapors may spread long distances and travel to areas away from the work site before igniting or flashing back to the vapor source.  
 Wear personal protective equipment; see section 8.

**Contact avoidance measures:** No data available.

**Hygiene measures:** Do not inhale vapours / aerosols. Avoid contact with skin and eyes. Wash off immediately in the event of contact with the skin (rinsing agent: glycol polyethylene 400), rinse off afterwards with copious amounts of water. Do not eat, drink, smoke, or sniff while at work. Wash your hands and/or face before breaks and before termination of work. Take off clothing and shoes contaminated with product. Clean before reuse.

### Storage

**Safe storage conditions:** In order to ensure due transportation, make certain that stacks are of the correct height, containers are securely fastened so as not to fall off, and labelled according to the regulations. Store in the original receptacle, keeping this tightly sealed, under cool and dry conditions. Inadequate materials are: Light metals copper, brass. Take precautionary measures against static charges, keep away from sources of ignition. Explosion protection equipment required. Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container. This material may have a low electrical conductivity and therefore may accumulate dangerous levels of static electricity. An ignitable vapor-air mixture can form inside storage tanks.

The user must be sure to dissipate static charge by careful bonding and grounding of all equipment and personnel involved in fluid transfer with continuity checks to prove effectiveness. Additional precautions against fire and explosion are the use of inert gas to purge vapor space; dip-pipes while filling vessels, especially lined vessels; grounded tank level floats; reduced flow velocity; self-closing valves on transfer lines and flame arrestors in vent lines.

Additional guidance on fire and explosion protection may be found in various consensus standards, including NFPA 30, 69 and 77 and API 2003 as well as OSHA regulation 29CFR1910.106.

**Safe packaging materials:** No data available.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

Suitable measuring processes are: BIA method 6568  
None of the components have assigned exposure limits.

#### Appropriate Engineering Controls

The substance must be handled under strictly controlled conditions in accordance with Article 17/18 of the REACH regulation. Refill and handle product only in closed system. Leak detection recommended. Do not add wastewater to a biological wastewater treatment plant. Dispose of waste gases in a suitable incineration plant. Minimization of emissions by means of suitable technical measures such as flanges and valves with low leakage rates, recirculation of vapours. All precautionary measures indicated have to be observed.

### Individual protection measures, such as personal protective equipment

**Eye/face protection:** Wear safety glasses with side shields.

#### Skin Protection

##### Hand Protection:

Material: Nitrile.  
Guideline: DIN EN 374  
Additional Information: Accidental release measures  
Material: Fluorinated rubber (Viton)  
Guideline: DIN EN 374  
Additional Information: The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

**Skin and Body Protection:**

Select materials and equipment for physical protection depending on the concentration and volume of hazardous substances and the workplace involved. To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product. A safety shower and eye wash fountain should be readily available.

**Respiratory Protection:**

in case vapors or aerosols appear use respiratory equipment with suitable filter or wear a self contained respiratory apparatus Suitable filter: A, code colour brown Note time limit for wearing respiratory protective equipment. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

**Hygiene measures:**

Do not inhale vapours / aerosols. Avoid contact with skin and eyes. Wash off immediately in the event of contact with the skin (rinsing agent: glycol polyethylene 400), rinse off afterwards with copious amounts of water. Do not eat, drink, smoke, or sniff while at work. Wash your hands and/or face before breaks and before termination of work. Take off clothing and shoes contaminated with product. Clean before reuse.

<b>9. Physical and chemical properties</b>
--

**Appearance**

<b>Physical state:</b>	liquid
<b>Form:</b>	liquid
<b>Color:</b>	colourless
<b>Odor:</b>	stinging
<b>Odor Threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Freezing point:</b>	-123 °C
<b>Boiling Point:</b>	approx. 79 °C (1,013 hPa)
<b>Flash Point:</b>	approx. -12 °C (EEC method 92/69/EEC, A 9)
<b>Evaporation Rate:</b>	No data available.
<b>Flammability (solid, gas):</b>	No data available.

<b>Explosive limit - upper (%):</b>	10.1 %(V) (EC Method A.11)
<b>Explosive limit - lower (%):</b>	1.8 %(V) (EC Method A.11)
<b>Vapor pressure:</b>	approx. 110 hPa (20 °C)
<b>Vapor density (air=1):</b>	No data available.
<b>Density:</b>	0.886 g/cm <sup>3</sup> (20 °C)
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in Water:</b>	approx. 0.5 g/l (20 °C)
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	2.66 Measured tested substance: 1-chlorobutane
<b>Self Ignition Temperature:</b>	The substance or mixture is not classified as self heating.
<b>Decomposition Temperature:</b>	The substance or mixture is not classified self-reactive.
<b>Kinematic viscosity:</b>	No data available.
<b>Dynamic viscosity:</b>	0.45 mPa.s (20 °C)

**Other information**

<b>Explosive properties:</b>	No data available.
<b>Oxidizing properties:</b>	Not to be expected in view of the structure
<b>Minimum ignition temperature:</b>	approx. 245 °C (DIN 51 794)
<b>Metal Corrosion:</b>	No data available.
<b>Peroxides:</b>	The substance or mixture is not classified as organic peroxide.

## 10. Stability and reactivity

<b>Reactivity:</b>	No further information available
<b>Chemical Stability:</b>	No further information available
<b>Possibility of hazardous reactions:</b>	No further information available
<b>Conditions to avoid:</b>	Keep away from heat and sources of ignition.
<b>Incompatible Materials:</b>	No further information available
<b>Hazardous Decomposition Products:</b>	Hydrogen chloride.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation:</b>	Relevant route of exposure. Information on effects are given below.
<b>Skin Contact:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.
<b>Eye contact:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.
<b>Ingestion:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Inhalation:</b>	Relevant route of exposure. Information on effects are given below.
<b>Skin Contact:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.
<b>Eye contact:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.
<b>Ingestion:</b>	If handled correctly, not a relevant route of exposure. Information on effects are given below.

### Information on toxicological effects

#### Acute toxicity (list all possible routes of exposure)

<b>Oral Product:</b>	LD 50 (Rat): 2,200 mg/kg
<b>Dermal Product:</b>	No data available.

**Inhalation**  
**Product:** LC 50 (Rat): > 7.74 mg/l Aerosols

**Repeated dose toxicity**  
**Product:** NOAEL (Rat(male/female), Oral): 120 mg/kg LOAEL (Rat(male/female), Oral): 250 mg/kg  
NOAEL (Mouse(male/female), Oral): 500 mg/kg LOAEL (Mouse(male/female), Oral): 1,000 mg/kg

**Skin Corrosion/Irritation**  
**Product:** Not irritating OECD Test Guideline 404 (Rabbit, 4 h): Not irritating Based on available data, the classification criteria are not met.

**Serious Eye Damage/Eye Irritation**  
**Product:** Not irritating Rabbit: Not irritating Based on available data, the classification criteria are not met.

**Respiratory or Skin Sensitization**  
**Product:** Buehler Test, OECD Test Guideline 406 (Guinea Pig): Not a skin sensitizer. Based on available data, the classification criteria are not met.

**Carcinogenicity**  
**Product:** Based on available data, the classification criteria are not met. The assessment is based on the strength-of-evidence approach. Not classified Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

**US. National Toxicology Program (NTP) Report on Carcinogens:**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**

**Germ Cell Mutagenicity**

**In vitro**  
**Product:** gene mutation (OECD TG 471): negative  
Chromosome aberration test in vitro (OECD TG 473): negative  
Sister chromatid exchange assay (OECD TG 479): negative

**In vivo**  
**Product:** Chromosomal aberration (OECD TG 474) Intraperitoneal (Mouse, male/female): negative

**Reproductive toxicity**  
**Product:** An Expert Judgment stated that no classification is necessary based on present knowledge.

**Specific Target Organ Toxicity - Single Exposure**  
**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**  
**Product:** No data available.

**Aspiration Hazard**  
**Product:** No data available.

**Other effects:** No data available.

## 12. Ecological information

### Ecotoxicity:

#### Acute hazards to the aquatic environment:

##### Fish

**Product:** LC 50 (Cyprinus carpio (Carp), 48 h): 258.6 mg/l  
LC 50 (Brachydanio rerio, 96 h): 75.6 mg/l

##### Aquatic Invertebrates

**Product:** EC 50 (Daphnia magna, 48 h): 452 mg/l  
NOEC (Daphnia magna, 21 d): 5.6 mg/l  
EC 50 (Daphnia magna, 21 d): 16 mg/l

#### Chronic hazards to the aquatic environment:

##### Fish

**Product:** No data available.

##### Aquatic Invertebrates

**Product:** No data available.

##### Toxicity to Aquatic Plants

**Product:** EC 50 (Desmodesmus subspicatus (green algae), 72 h): > 450.00 mg/l  
NOEC (Desmodesmus subspicatus (green algae), 72 h): 90 mg/l

### Persistence and Degradability

#### Biodegradation

**Product:** 47.2 % (28 d, BODIS test)

#### BOD/COD Ratio

**Product:** No data available.

### Bioaccumulative potential

#### Bioconcentration Factor (BCF)

**Product:** Cyprinus carpio (Carp), Bioconcentration Factor (BCF): 7.6 - 21 (OECD 305)

### Partition Coefficient n-octanol / water (log Kow)

**Product:** Log Kow: 2.66 Measured tested substance: 1-chlorobutane

**Mobility in soil:** Log Koc: 2.5 (OECD TG 121)

**Other adverse effects:** No data available.

## 13. Disposal considerations

**Disposal methods:** Waste must be disposed of in accordance with federal, state and local regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. **DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.**

**Contaminated Packaging:** Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities.

## 14. Transport information

### Domestic regulation

#### 49 CFR

UN/ID/NA number : UN 1127  
Proper shipping name : Chlorobutanes

Class : 3  
Packing group : II  
Labels : 3  
ERG Code : 130  
Marine pollutant : no

### International Regulations

#### IATA-DGR

UN/ID No. : UN 1127  
Proper shipping name : Chlorobutanes  
Class : 3  
Packing group : II  
Labels : 3  
Packing instruction (cargo aircraft) : 364  
Packing instruction (passenger aircraft) : 353

#### IMDG-Code

UN number : UN 1127  
Proper shipping name : CHLOROBUTANES  
  
Class : 3  
Packing group : II  
Labels : 3

EmS Code : F-E, S-D

Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

**15. Regulatory information****US Federal Regulations****TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

None present or none present in regulated quantities.

**US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)**

None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

<u>Chemical Identity</u>	<u>Reportable quantity</u>
1-chlorobutane	100 lbs.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories**

Flammable (gases, aerosols, liquids, or solids), Aspiration Hazard

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances****SARA 311/312 Hazardous Chemical**

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>

None present or none present in regulated quantities.

**SARA 313 (TRI Reporting)**

None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

None present or none present in regulated quantities.

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

**US State Regulations**

**US. California Proposition 65**

No ingredient requiring a warning under CA Prop 65.

**US. New Jersey Worker and Community Right-to-Know Act**
Chemical Identity

1-chlorobutane

**US. Massachusetts RTK - Substance List**
Chemical Identity

1-chlorobutane

**US. Pennsylvania RTK - Hazardous Substances**
Chemical Identity

1-chlorobutane

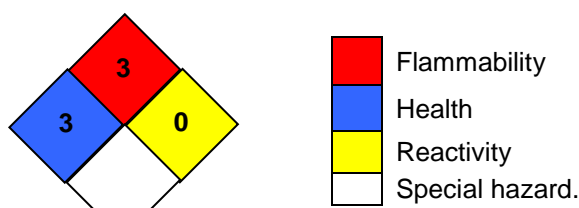
**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

**16. Other information, including date of preparation or last revision**
**HMIS Hazard ID**

<b>Health</b>	3
<b>Flammability</b>	3
<b>Physical Hazards</b>	0
<b>PERSONAL PROTECTION</b>	

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; \*Chronic health effect

**NFPA Hazard ID**


Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

**Issue Date:** 07/26/2019

**Version #:** 1.1

**Further Information:** No data available.

**Revision Information:** Changes since the last version are highlighted in the margin. This version replaces all previous versions.

**Disclaimer:**

This information and any recommendations, technical or otherwise, are presented in good faith and believed to be correct as of the date prepared. Recipients of this information and recommendations must make their own determination as to its suitability for their purposes. In no event shall Evonik assume liability for damages or losses of any kind or nature that result from the use of or reliance upon this information and recommendations. EVONIK EXPRESSLY DISCLAIMS ANY REPRESENTATIONS AND WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, NON-INFRINGEMENT, MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE) WITH RESPECT TO ANY INFORMATION AND RECOMMENDATIONS PROVIDED. Reference to any trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used. Evonik reserves the right to make any changes to the information and/or recommendations at any time, without prior or subsequent notice.