

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Product form	: Substance
Trade name	: BRONTIDE
Chemical name	: (R)-(-)-butane-1,3-diol
IUPAC name	: butane-1,3-diol
EC-No.	: 228-532-0
CAS-No.	: 6290-03-5
REACH registration No	: 01-2120764879-30-0000
Formula	: C4H10O2
Synonyms	: 1,3-Butanediol, (R)-; butylene glycol; 1,3-Butanediol, (3R)-; BUTANE-1,3-DIOL, (R)-(-)-

**1.2. Relevant identified uses of the substance or mixture and uses advised against****1.2.1. Relevant identified uses**

Use of the substance/mixture	: Formulation into cosmetic and food products Use as intermediate in chemical, pharmaceutical and polymer industry Use as monomer in polymer industry Use of cosmetic products by professionals Use in cosmetics, perfumes/fragrances and personal care products Use as components in pharmaceuticals Use in washing and cleaning products by consumers and workers
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**1.2.2. Uses advised against**

No additional information available

**1.3. Details of the supplier of the safety data sheet**

Supplier:  
Genomatica  
4757 Nexus Center Drive  
San Diego, CA 92121, USA  
+1 (858) 652-5349

Manufacturer:  
Mater-Biotech  
Via A. Gramsci, 3, 45011 Bottrighe, Adria RO, Italy

**1.4. Emergency telephone number**

Emergency number	: For product information call: +1 858-652-5379 For emergencies only. Call CHEMTREC: +1 703-741-5970
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**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Not classified

**Adverse physicochemical, human health and environmental effects**

No additional information available

**2.2. Label elements****Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

No labelling applicable

**2.3. Other hazards not contributing to the classification**

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII  
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

# BRONTIDE Natural Butylene Glycol

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Name : Butane-1,3-diol  
CAS-No. : 6290-03-5  
EC-No. : 228-532-0

Name	Product identifier	%
(R)-(-)-Butane-1,3-diol	(CAS-No.) 6290-03-5 (EC-No.) 228-532-0	99 - 100

#### 3.2. Mixtures

Not applicable

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical advice/attention.  
First-aid measures after skin contact : Wash skin with plenty of water and soap. Seek medical attention if irritation develops.  
First-aid measures after eye contact : Check for and remove contact lenses. Immediately flush eyes thoroughly with water for at least 15 minutes. Seek medical attention if irritation develops.  
First-aid measures after ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. In all cases of doubt, or when symptoms persist, seek medical attention.

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

Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

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

Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media : For small fire: Dry powder. Carbon dioxide (CO<sub>2</sub>). For large fire: Water spray. Water fog. Foam.  
Unsuitable extinguishing media : Do not use water jet.

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

Fire hazard : May be combustible at high temperature.  
Explosion hazard : None known.  
Hazardous decomposition products in case of fire : Carbon dioxide. Carbon monoxide.

#### 5.3. Advice for firefighters

No additional information available

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

Protective equipment : Use personal protective equipment as required.  
Emergency procedures : Evacuate unnecessary personnel.

##### 6.1.2. For emergency responders

Protective equipment : Wear recommended personal protective equipment. For further information refer to section 8: "Exposure controls/personal protection".  
Emergency procedures : Ventilate area.

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : For small spills: dilute with small amount of water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Large spills: Contain and/or absorb spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Flush residue with large amounts of water. Dispose in a safe manner in accordance with local/national regulations.

#### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of residues refer to section 13: "Disposal considerations".

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Precautions for safe handling : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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

- Storage conditions : Store tightly closed in a dry, cool and well-ventilated place.
- Incompatible materials : Strong oxidizing agents. Acid chlorides. Acid anhydrides. Chloroformates. Reducing agents.

#### 7.3. Specific end use(s)

Refer to section 1.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

No additional information available

#### 8.2. Exposure controls

##### Appropriate engineering controls:

Provide local exhaust or general room ventilation.

##### Hand protection:

Chemical resistant gloves (according to European standard NF EN 374 or equivalent)

##### Eye protection:

Use eye protection to EN 166, designed to protect against liquid splashes

##### Skin and body protection:

Wear suitable protective clothing. Chemical resistant suit.

##### Respiratory protection:

Not required for normal conditions of use. In case of insufficient ventilation, wear suitable respiratory equipment. Approved organic vapour respirator

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Appearance : Clear.
- Colour : Colourless.
- Odour : Odourless.
- Odour threshold : No data available
- pH : No data available
- Relative evaporation rate (butylacetate=1) : No data available
- Melting point : No data available
- Freezing point : < -50 °C at 101.3 kPa
- Boiling point : 207.5 °C at 101.3 kPa
- Flash point : 121 °C at 1013 hPa
- Auto-ignition temperature : 395 °C at 1013 hPa
- Decomposition temperature : No data available
- Flammability (solid, gas) : Not applicable
- Vapour pressure : >8 - <10 Pa at 20 °C
- Relative vapour density at 20 °C : No data available
- Relative density : ≥1.004 - ≤1.006 g/cm<sup>3</sup> at 20 °C
- Solubility : Water: ~999800 mg/l at 25 °C
- Log Pow : No data available
- Log Kow : ≥-0.92 - ≤-0.08 at 25 °C
- Viscosity, kinematic : >96 - <98 mm<sup>2</sup>/s at 25 °C
- Viscosity, dynamic : No data available
- Explosive properties : Product is not explosive.
- Oxidising properties : Not oxidising.

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Explosive limits : Not applicable

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No dangerous reactions known under normal conditions of use.

### 10.2. Chemical stability

Stable in use and storage conditions as recommended in item 7.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

No additional information available

### 10.5. Incompatible materials

Strong oxidizing agents. Acid chlorides. Acid anhydrides. Chloroformates. Reducing agents.

### 10.6. Hazardous decomposition products

On combustion forms: Carbon oxides (CO, CO<sub>2</sub>).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified (Conclusive but not sufficient for classification)
Acute toxicity (dermal)	: Not classified (Conclusive but not sufficient for classification)
Acute toxicity (inhalation)	: Not classified (Conclusive but not sufficient for classification)
<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
LD50 oral rat	≈ 22800 mg/kg bodyweight (results obtained on a similar substance)
Skin corrosion/irritation	: Not classified (On basis of test data)
Serious eye damage/irritation	: Not classified (On basis of test data)
Respiratory or skin sensitisation	: Not classified (Conclusive but not sufficient for classification)
Germ cell mutagenicity	: Not classified (Conclusive but not sufficient for classification)
Carcinogenicity	: Not classified (Conclusive but not sufficient for classification)
<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
NOAEL (chronic, oral, animal/male, 2 years)	≈ 5000 mg/kg bodyweight rat (results obtained on a similar substance)
Reproductive toxicity	: Not classified (Conclusive but not sufficient for classification)
<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
NOAEL (animal/male, F0/P)	≈ 5000 mg/kg bodyweight rat (results obtained on a similar substance)
STOT-single exposure	: Not classified (Conclusive but not sufficient for classification)
STOT-repeated exposure	: Not classified (Conclusive but not sufficient for classification)
Aspiration hazard	: Not classified (Conclusive but not sufficient for classification)
<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
Viscosity, kinematic	96 - 98 mm <sup>2</sup> /s at 25 °C

## SECTION 12: Ecological information

### 12.1. Toxicity

Acute aquatic toxicity : Not classified

Chronic aquatic toxicity : Not classified

<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
LC50 fish 1	> 100 mg/l (based on mortality) (results obtained on a similar substance)
EC50 Daphnia 1	> 1000 mg/l (based on mobility) (results obtained on a similar substance)
EC50 72h algae (1)	> 1070 mg/l Selenastrum sp. (based on growth rate) (results obtained on a similar substance)
NOEC chronic crustacea	85 mg/l 21 d - Daphnia magna (based on reproduction) (results obtained on a similar substance)

### 12.2. Persistence and degradability

<b>(R)-(-)-butane-1,3-diol (6290-03-5)</b>	
Persistence and degradability	Readily biodegradable.

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### 12.3. Bioaccumulative potential

(R)-(-)-butane-1,3-diol (6290-03-5)	
Log Kow	≥-0.92 - ≤-0.08 at 25 °C
Bioaccumulative potential	No bioaccumulation.

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

(R)-(-)-butane-1,3-diol (6290-03-5)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	
Results of PBT assessment	(R)-(-)-1,3-butanediol is readily biodegradable, has a Log Kow of -0.9, is not toxic to freshwater organisms, and there is a lack of evidence of chronic toxicity. According to ECHA's Guidance on Information Requirements and Chemical Safety Assessment Chapter R.11: PBT/vPvB (Version 3.0), the substance is not PBT/vPvB.

### 12.6. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

- Waste treatment methods : Disposal must be done according to official regulations.  
Product/Packaging disposal recommendations : Handle uncleaned empty containers as full ones.

## SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
<b>14.2. UN proper shipping name</b>				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
<b>14.3. Transport hazard class(es)</b>				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
<b>14.4. Packing group</b>				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
<b>14.5. Environmental hazards</b>				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

### 14.6. Special precautions for user

#### - Overland transport

Not regulated

#### - Transport by sea

Not regulated

#### - Air transport

Not regulated

#### - Inland waterway transport

Not regulated

#### - Rail transport

Not regulated

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

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### SECTION 15: Regulatory information

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

##### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

(R)-(-)-butane-1,3-diol is not on the REACH Candidate List

(R)-(-)-butane-1,3-diol is not on the REACH Annex XIV List

##### 15.1.2. National regulations

###### Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

###### Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

#### 15.2. Chemical safety assessment

A chemical safety assessment has been carried out

### SECTION 16: Other information

Abbreviations and acronyms:

	PBT - Persistent, Bioaccumulative and Toxic substance
	vPvB - Very Persistent and Very Bioaccumulative

Sources of Key data : CSR - Chemical Safety Report.

SDS EU (REACH Annex II)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. BRONTIDE is the subject of Genomatica's EU and US trademark applications.*