

# Safety Data Sheet

fluorochem.

## 1. Identification of the substance/mixture

### 1.1 Product identification

Product name	(S)-(+)-2-Butanol
Other names	
Product code	F036066
CAS	4221-99-2
MDL	MFCD00064281
EINECS	224-168-1
REACH Registration number	

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

Relevant uses	For research and development purposes.
Uses advised against	No uses advised.

### 1.3 Safety Data Sheet supplier details

Company	Fluorochem Ltd
Address	Unit 14, Graphite Way Hadfield Glossop Derbys. SK13 1QH United Kingdom
Telephone	+44 1457 860111
Email	sds@fluorochem.co.uk

### 1.4 Emergency Telephone

Emergency Telephone	+44 20 3807 3798 (Poison Information)
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## 2. Hazard Identification

### 2.1 Classification of the substance or mixture

Classification	H319 Eye Irrit. 2 H336 STOT SE 3 H225 Flam. Liq. 2 H335 STOT SE 3
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### 2.2 Label Elements

Signal Word

**Warning**

Pictograms



**GHS02**



**GHS07**

Hazards

**H319** Causes serious eye irritation.  
**H336** May cause drowsiness or dizziness.  
**H225** Highly flammable liquid and vapour.  
**H335** May cause respiratory irritation.

Precautions

**P243** Take action to prevent static discharges.  
**P321** Specific treatment (see Section 4 on this SDS).  
**P301+P330+P331** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
**P233** Keep container tightly closed.  
**P260** Do not breathe dust/fume/gas/mist/vapours/spray.  
**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
**P403+P233** Store in a well-ventilated place. Keep container tightly closed.  
**P301+P310** IF SWALLOWED: Immediately call a POISON CENTER/doctor.  
**P271** Use only outdoors or in a well-ventilated area.  
**P405** Store locked up.  
**P202** Do not handle until all safety precautions have been read and understood.  
**P210** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
**P501** Dispose of contents/container to hazardous waste disposal.  
**P264** Wash hands thoroughly after handling.  
**P312** Call a POISON CENTER/doctor if you feel unwell.  
**P342+P311** If experiencing respiratory symptoms: Call a POISON CENTER/doctor.  
**P240** Ground and bond container and receiving equipment.  
**P241** Use explosion-proof equipment.  
**P270** Do not eat, drink or smoke when using this product.  
**P303+P361+P353** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
**P370+P378** In case of fire: Use dry sand to extinguish.  
**P361+P364** Take off immediately all contaminated clothing and wash it before reuse.  
**P304+P340** IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
**P280** Wear protective gloves/protective clothing and eye/face protection.  
**P242** Use non-sparking tools.

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## 2.3 Other Hazards

## Other Classification Hazards

### 3. Composition

#### 3.1 SUBSTANCE

Name	CAS	Einecs	Composition	Hazards
(S)-(+)-2-Butanol	4221-99-2	224-168-1		

#### 3.2 MIXTURE

Not applicable. Product is a substance.

### 4. First Aid Measures

#### 4.1 Description of First Aid Measures

Eye Contact	In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing and seek medical attention.
Ingestion	Where Diphoterine is not available, rinse mouth with copious amounts of water. Seek urgent medical advice.
Inhalation	Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory problems seek immediate medical attention.
Skin Contact	After contact with skin, wash immediately with plenty of water and soap. Remove contaminated clothing immediately. In case of skin reactions, consult a physician.
General Advice	No additional advice.

#### 4.2 Most Important Symptoms and Effects

Most Important Symptoms and Effects	No known symptoms or effects.
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#### 4.3 Indication of any urgent medical attention and special treatments needed

Immediate First Aid Measures	No special immediate treatment required.
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### 5. Fire Fighting Measures

#### 5.1 Extinguishing Media

Suitable Fire Extinguishing Media	Use sand, extinguishing powder or alcohol resistant foam to extinguish fire.
Unsuitable Fire Extinguishing Media	No known unsuitable media.

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

**Special Hazards**

Thermal decomposition can lead to release of irritating gases and vapours.

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**5.3 Recommendations for firefighting personnel**

**Advice for Fire Fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

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## 6. Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures**

**Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Keep personnel away from spill/leak.

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**6.2 Environmental Precautions**

**Environmental Precautions**

Prevent further leakage if safe to do so. Prevent product from entering drains. Do not let product enter waterways or sewer systems. Discharge into the environment must be avoided.

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**6.3 Containment and cleaning methods and materials**

**Containment - Methods and Materials**

Absorb the spilled material with an inert absorbent (e.g. sand, silica gel, rag, vermiculite) before transferring into an airtight container. Remove all sources of ignition. Dispose of appropriately according to local regulations.

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**6.4 References to other sections**

**Referenced SDS Sections**

For personal protection see section 8. For disposal see section 13.

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## 7. Handling and Storage

**7.1 Precautions for safe handling**

**Safe Handling**

Wear appropriate personal protective equipment. Use only under a chemical fume hood. Keep away from heat/sparks/open flame/hot surfaces. Take measures to prevent the build-up of electrostatic charge. Ensure adequate exhaust ventilation, especially if dust, aerosol or fumes will be generated. Avoid contact with skin, eyes and clothing. For precautions see section 2.2.

**Protection Against Explosion and Fire**

Where possible, use anti static and spark proof equipment when handling.

**General Occupational Hygiene**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before and after use. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use.

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**7.2 Conditions for Safe Storage and Incompatibilities**

<b>Managing Storage Risks</b>	Keep container tightly closed and upright. Store in a cool, dry and well-ventilated place.
<b>Storage Controls</b>	No special requirements.
<b>Maintaining Integrity</b>	Keep container tightly closed in a cool area away from sunlight or heat sources.
<b>Other Advice</b>	No other specific advice available.

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### **7.3 Specific End Use(s)**

<b>Specific End Use(s)</b>	No specific end uses are advised. The products supplied are for research purposes only.
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## **8. Exposure Controls / Personal Protection**

### **8.1 Control Parameters**

<b>Control Parameters</b>	No data available.
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### **8.2 Exposure Controls**

<b>Engineering Measures</b>	Use only under a chemical fume hood ensuring adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Face Protection</b>	Wear tightly fitting safety goggles which adhere to European standard EN 166. Ensure eye bath is to hand.
<b>Hand Protection</b>	Handle with impermeable gloves. Inspect gloves before use. Gloves must satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
<b>Skin Protection</b>	Wear appropriate protective clothing ensuring all skin is covered. Wear safety shoes that meet at least S1 standards. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
<b>Respiratory Protection</b>	Product should be handled in a fume cupboard with adequate extraction. No respiratory equipment is needed under normal use conditions.
<b>Hygiene Measures</b>	Ensure hair or skin particles cannot enter the chemical container.
<b>Environment Exposure Controls</b>	Avoid discharge into the environment, see section 6.2.

## **9. Physical and Chemical Properties**

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

<b>a) State</b>	Liquid
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b) Colour	No data available.
c) Odour	No data available.
d) Melting Point / Freezing Point	No data available.
e) Initial Boiling point or Boiling range	99.0°C
f) Flammability	No data available.
g) Upper / Lower Flammability or Explosion Limits	9.8 to 1.7
h) Flash Point	24°C Closed Cup
i) Auto Ignition Temperature	No data available.
j) Decomposition Temperature	No data available.
k) pH	No data available.
l) Viscosity	No data available.
m) Solubility	No data available.
n) Partition Coefficient	No data available.
o) Vapour Pressure	16.7 hPa at 20°C
p) Relative Density	0.803g/cm <sup>3</sup> at 25°C
q) Vapour Density	No data available.
r) Appearance	Colourless to pale yellow liquid

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## 9.2 Other Safety Information

Other Information No data available.

# 10. Stability and Reactivity

## 10.1 Reactivity

Reactivity No known reactivity, based on information available.

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## 10.2 Stability

Stability Stable under recommended storage conditions.

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## 10.3 Possibility of Hazardous Reactions

Possibility of Hazardous Reactions None under normal storage conditions.

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## 10.4 Conditions to Avoid

Conditions to Avoid Heat, sparks, open flames, sources of ignition. Exposure to moisture.

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## 10.5 Incompatible Materials

Incompatible Materials Strong oxidizing agents.

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## 10.6 Hazardous Decomposition Products

Hazardous Decomposition Products No data available.

## 11. Toxicology Information

### 11.1 Information on Hazard Classes, as defined in Regulation (EC) No. 1271/2008

Acute Toxicity	No toxicological data available for this product.
Skin Corrosion / Irritation	No Toxicology data available for this product.
Serious Eye Damage / Irritation	No Toxicology data available for this product.
Respiratory or Skin Sensitisation	No Toxicology data available for this product.
Germ Cell Mutagenicity	No Toxicology data available for this product.
Carcinogenicity	No Toxicology data available for this product.
Reproductive Toxicity	No Toxicology data available for this product.
STOT-single Exposure	May cause drowsiness or dizziness.
STOT-repeated Exposure	No Toxicology data available for this product.
Aspiration Hazard	No Toxicology data available for this product.

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### 11.2 Information about Other Hazards

Endocrine Disrupting Properties	Avoid release to the environment.
Addition Toxicology Information	No Toxicology data available for this product.

## 12. Ecological Information

### 12.1 Toxicity

Toxicity	No Ecological data available for this product.
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### 12.2 Persistence and Degradability

Persistence and Degradability	No Ecological data available for this product.
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### 12.3 Bio-Accumulative Potential

Bio-Accumulative Potential	No Ecological data available for this product.
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### 12.4 Mobility in Soil

Mobility in Soil	No Ecological data available for this product.
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### 12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	No Ecological data available for this product.
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### 12.6 Endocrine Disrupting Properties

**Endocrine Disrupting Properties** Avoid release to the environment.

### 12.7 Other Adverse Effects

**Other Adverse Effects** Avoid release to the environment.

## 13. Disposal Considerations

### 13.1 Waste Treatment Methods

**Disposal Operations** Ensure product is disposed of by licensed waste carriers.

**Disposal of Packaging** Ensure INNER PACKAGING is disposed of by licensed waste carriers. Some OUTER PACKAGING MAY be recyclable if not contaminated.

## 14. Transport Information

### 14.1 UN Number

<b>IATA UN Number</b>	1120	<b>ADR UN Number</b>	1120	<b>IMDG UN Number</b>	1120
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### 14.2 Official UN Shipping Name

<b>IATA Proper Shipping Name</b>	Butanols ((S)-(+)-2-Butanol)	<b>ADR Proper Shipping Name</b>	Butanols ((S)-(+)-2-Butanol)	<b>IMDG Proper Shipping Name</b>	Butanols ((S)-(+)-2-Butanol)
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### 14.3 Hazard classes for transport purposes

<b>IATA Hazard Class</b>	3.0	<b>ADR Hazard Class</b>	3.0	<b>IMDG Hazard Class</b>	No data available.
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### 14.4 Packing Group

<b>IATA Packing Group</b>	III	<b>ADR Packing Group</b>	III	<b>IMDG Packing Group</b>	III
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### 14.5 Environmental Hazards

<b>IATA Environmental Hazards</b>	No data available.	<b>ADR Environmental Hazards</b>	No data available.	<b>IMDG Environmental Hazards</b>	No data available.
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### 14.6 Special Precautions

No Information Available

### 14.7 Bulk Maritime Transport in accordance with IMO Instructions

<b>IATA Sub Class</b>	- None -	<b>ADR Sub Class</b>	- None -	<b>IMDG Sub Class</b>	- None -
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## 15. Regulatory Information

### 15.1 Health, safety and environmental regulations/legislation specific to the substance or mixture

**Regulatory Information**      The Syria (Sanctions) (EU Exit) Regulations 2019

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### 15.2 Chemical Safety Assessment

**Chemical Safety Assessment**      There is no chemical safety assessment available for this product.

## 16. Other Information

### Information Not Covered in Other Sections

**Information Not Covered in Other Sections**      ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road (European agreement on the international transport of dangerous goods by road). RID: International Regulations concerning the Transport of Dangerous Goods by Rail (Regulations regarding the international transport of dangerous goods by rail). IMDG: International Maritime Code for Dangerous Goods. IATA: International Air Transport Association. IATA-DGR: Dangerous Goods Regulations fra International Air Transport Association. ICAO: International Civil Aviation Organisation. ICAO-TI: Technical instructions from ICAO. GHS: Globally Harmonized System for Classification and Labelling of Chemicals. CAS: Chemical Abstracts Service

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### Other Information

**Revision**

1

**Date Modified**

19/12/2024 18:46:00

**Disclaimer**

The product listed is for research and development purposes only and not for human or animal use. As such, in most cases, the toxicological, ecological and physicochemical properties have not been fully determined and the product should be treated with respect and always handled under suitable conditions by appropriately qualified personnel. The responsible party shall use this datasheet only in conjunction with other sources of information gathered by them, and should make an independent judgement of suitability, to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this material safety data sheet, or in combination with any other product or process, is the responsibility of the user. This SDS adheres to Regulation (EC) No 1907/2006, and as of 13th April 2023, also conforms to EU Regulation 2020/878.