

## Material Safety Data Sheet

Date Printed: 10/FEB/2005

Date Updated: 12/MAR/2004

Version 1.4

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

---

1 - Product and Company Information

---

Product Name (1S)-(-)-BETA-PINENE, 99+% (97% EE/GLC)  
Product Number 402753

Company Sigma-Aldrich Pty, Ltd  
Unit 2, 14 Anella Avenue  
Castle Hill NSW 1765

Technical Phone # +61 2 9841 0555

Fax +61 2 9841 0500

Emergency Phone # +61 2 9841 0566

---

2 - Composition/Information on Ingredients

---

Product Name	CAS #	EC no	Annex I Index Number
(-)-B-PINENE	18172-67-3	242-060-2	None

Formula C10H16  
Molecular Weight 136.24 AMU

---

3 - Hazards Identification

---

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Flammable. Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact. Harmful: may cause lung damage if swallowed. Toxic to aquatic organisms.

---

4 - First Aid Measures

---

## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

## AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

## AFTER INGESTION

If swallowed, do not induce vomiting; call a physician immediately.

---

## 5 - Fire Fighting Measures

---

### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Water may be effective for cooling, but may not effect extinguishment.

### SPECIAL RISKS

Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion can occur under fire conditions. In advanced or massive fires the area should be evacuated and the fire should be fought from a remote explosion-resistant location.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

### SPECIFIC METHOD(S) OF FIRE FIGHTING

Use water spray to cool fire-exposed containers.

---

## 6 - Accidental Release Measures

---

### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

---

## 7 - Handling and Storage

---

### HANDLING

Directions for Safe Handling: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame.

---

## 8 - Exposure Controls / Personal Protection

---

### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

### GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Wash contaminated clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.  
Eye Protection: Chemical safety goggles.

---

## 9 - Physical and Chemical Properties

---

Appearance	Physical State: Clear liquid Color: Very faintly yellow-green	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	165 - 167 °C	760 mmHg
MP/MP Range	-61 °C	
Flash Point	36 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	2 mmHg	20 °C
SG/Density	0.871 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	4.7 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

---

## 10 - Stability and Reactivity

---

### STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

## 11 - Toxicological Information

---

### SENSITIZATION

Skin: May cause allergic skin reaction.

### SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: Harmful if absorbed through skin.

Eye Contact: Causes eye irritation.

Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract. Material may be

irritating to mucous membranes and upper respiratory tract.  
Ingestion: Harmful if swallowed.

---

## 12 - Ecological Information

---

No data available.

---

## 13 - Disposal Considerations

---

### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

---

## 14 - Transport Information

---

### RID/ADR

UN#: 2319  
Class: 3  
PG: III  
Proper Shipping Name: Terpene hydrocarbons, n.o.s.

### IMDG

UN#: 2319  
Class: 3  
PG: III  
Proper Shipping Name: TERPENE HYDROCARBONS, N.O.S.,  
Marine Pollutant: No  
Severe Marine Pollutant: No  
Technical Name: Required

### IATA

UN#: 2319  
Class: 3  
PG: III  
Proper Shipping Name: Terpene hydrocarbons, n.o.s.  
Inhalation Packing Group I: No  
Technical Name: Required

---

## 15 - Regulatory Information

---

### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

INDICATION OF DANGER: Xn N  
Harmful. Dangerous for the environment.  
R-PHRASES: 10 20/21/22 36/37/38 43 65 51  
Flammable. Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact. Harmful: may cause lung damage if swallowed. Toxic to aquatic organisms.  
S-PHRASES: 16 26 36/37 46 61 62  
Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves. If swallowed, seek medical advice immediately and show this container or label. Avoid release to the environment. Refer to special instructions/safety data sheets. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

---

## 16 - Other Information

---

#### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

#### DISCLAIMER

For R&D use only. Not for drug, household or other uses.