1. Identification of the substances/ mixture and of the company/ undertaking

1.1 Product Identifiers
Product Code   RM4606
Product Name  (S)-(+)2-Butanol

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses     Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
Produced by       HiMedia Laboratories Pvt. Ltd.
Address           23, Vadhani Indl.Estate, LBS Marg, Mumbai 400 086, India.
Tel. No.          +91-22-2500 0970, +91-22-2500 1607
Fax No.           +91-22-2500 2468

1.4 Emergency Tel. No.
Emergency Tel.No. Please contact the regional HiMedia representation in your country

2. Hazards Identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Flammable liquids (Category 3)
Serious eye damage/eye irritation (Category 2A)
Specific target organ toxicity, single exposure; Respiratory tract irritation (Category 3)
Specific target organ toxicity,single exposure; Narcotic effects (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Flammable.
Irritating to eyes and respiratory system.
Vapours may cause drowsiness and dizziness.

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

Signal word   Warning
Hazard Statement(s)
H226        Flammable liquid and vapour
H319        Causes serious eye irritation
H335        May cause respiratory irritation
H336        May cause drowsiness or dizziness

Precautionary Statement(s)
P261        Avoid breathing 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.

Symbol(s)
R-Phrase(s)
R10 Flammable.
R36/37 Irritating to eyes and respiratory system.
R67 Vapours may cause drowsiness and dizziness.

S-Phrase(s)
S7/9 Keep container tightly closed and in a well-ventilated place.
S13 Keep away from food, drink and animal feedingstuffs.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S46 If swallowed, seek medical advice immediately and show this container or label.

2.3 Other hazards - none

3. Composition/Information on Ingredients
3.1 Substances
Synonym: (S)-(+)-sec-Butyl alcohol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>(S)-(+)-2-Butanol</td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>4221-99-2</td>
</tr>
<tr>
<td>EC-No.</td>
<td>224-168-1</td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-127-00-5</td>
</tr>
</tbody>
</table>

Molecular Formula: C₄H₁₀O
Molecular Weight: 74.12

4. First Aid Measures
4.1 Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
No data available

4.3 Indication of immediate medical attention and special treatment needed
No data available

5. Fire Fighting Measures
5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Precautions for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
No data available
6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see Section 13.

7 Handling and Storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Normal measures for preventive fire protection.

7.3 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended Storage Temperature: Store below 30°C

7.3 Specific end uses
No data available

8 Exposure Controls/Personal Protection

8.1 Control parameters
Components with workplace control parameters

8.2 Exposure controls
Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment
Hygiene measure
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands face after working with the substance.

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. 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.
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific work place.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK(EN 14387) respirator cartridges as a backup to the engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environment exposure controls
Do not empty into drains

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties
Appearance | Colourless to light yellow liquid
Odour | No data available
Odour Threshold | No data available
Odour Threshold | No data available
pH | No data available
Melting/freezing point | No data available
Initial boiling point and boiling range | No data available
Flash point | No data available
Upper/lower flammability or explosive limits | No data available
Vapour pressure | No data available
Vapour density | No data available
Relative density | No data available
Water Solubility | No data available
Partition coefficient: n-octanol/Water | No data available
Autoignition Temperature | No data available
Decomposition Temperature | No data available
Viscosity | No data available
Explosive properties | No data available
Oxidizing properties | No data available

9.2 Other safety information
No data available

10 Stability and Reactivity
10.1 Reactivity
No data available
10.2 Chemical stability
No data available
10.3 Possibility of hazardous reactions
No data available
10.4 Conditions to avoid
No data available
10.5 Incompatible materials
Strong oxidizing agents
10.6 Hazardous decomposition products
Other decomposition products - No data available

11 Toxicological Information
11.1 Information on toxicological effects
Acute toxicity
No data available
Skin corrosion/irritation
No data available
Serious eye damage/eye irritation
No data available
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity
No data available
Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive toxicity
No data available
Specific target organ toxicity- single exposure
No data available
Aspiration hazard
No data available

Potential Health Effects
Inhalation.
12 Ecological Information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 PBT and vPvB assessment
No data available

12.6 Other adverse effects
No data available

13 Disposal Considerations

13.1 Waste treatments methods
Product
Offer surplus and non-recyclable solutions to a licenced disposal company. Contact a licenced professional waste disposal service to dispose of this material.

13.2 Contaminated packaging
Dispose of as unused product.

14 Transport Information

14.1 UN-No.
ADR/RID: 1120   IMDG: 1120   IATA: 1120

14.2 UN proper shipping name
ADR/RID : (S)-(+)2-Butanol
IMDG : (S)-(+)2-Butanol
IATA : (S)-(+)2-Butanol

14.3 Transport hazard class(es)
ADR/RID: 3   IMDG: 3   IATA: 3

14.4 Packaging group
ADR/RID: 3   IMDG: 3   IATA: 3

14.5 Environmental hazards
ADR/RID: No   IMDG: Marine Pollutant:No   IATA: No

14.6 Special precautions for use
No data available

15 Regulatory Information
This safety datasheet complies with the requirements of Regulation(EC) No.1907/2006

15.1 Safety health and environment regulations/legislation specific for the substance or mixture
No data available

15.2 Chemical Safety Assessment
16 Other Information
Further information
Copyright 2010 HiMedia Laboratories Pvt. Ltd. License granted to make unlimited paper copies for internal use only. 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. Himedia Laboratories, 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.