SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name GEOlube® B 100
Product code 5008147
Synonyms Butanol with PO

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

Recommended use [RU] Lubricant
Uses advised against None known

1.3 Details of the supplier of the safety data sheet

Supplier GEO Specialty Chemicals UK Ltd
Charleston Road, Hardley, Hythe
Southampton, Hampshire SO45 3ZG
United Kingdom
Phone: +44 (0)23 80894666
Fax No: +44 (0)23 80243113

Responsibility Statement For further information, please contact safety-data-sheet-fp@geosc.com

1.4 Emergency telephone number

Emergency telephone 24 Hour Emergency Phone Number
GEO Specialty Chemicals UK Ltd
+44 (0)23 80891806

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

This substance is not classified as dangerous according to regulation (EC) 1272/2008 [GHS]

2.2 Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Signal word Not classified

Hazard statements
None
Precautionary statements
None

2.3 Other information
None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>EU EINECS</th>
<th>weight-%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>REACH Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butanol with PO</td>
<td>Not applicable</td>
<td>&gt; 99.5%</td>
<td>Not Classified as Hazardous</td>
<td>In compliance</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

3.2 Mixtures
Not applicable

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
In case of adverse health effects seek medical advice.

Eye contact
Rinse immediately with plenty of running water (for 10 minutes). Seek medical attention if necessary.

Skin contact
Rinse with running water and soap. If irritation should develop, get medical attention.

Ingestion
Rinse mouth with water, then drink one or two glasses of water.

Inhalation
Remove to fresh air.

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects
None known.

4.3 Indication of any immediate medical attention and special treatment needed

Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Water spray jet, Alcohol-resistant foam, Extinguishing powder, Carbon dioxide.
Extinguishing media which must not be used for safety reasons
High pressure waterjet.

5.2 Special hazards arising from the substance or mixture

Special Hazard
Formation of toxic gases is possible during heating or in fires.

Hazardous combustion products

5.3 Advice for firefighters

Special protective equipment for firefighters
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Firefighting measures
Cool exposed containers with water spray after extinguishing fire.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions
Wear suitable protective clothing and gloves.

6.2 Environmental precautions

Environmental precautions
Do not empty into drains/surface water/ground water. Inform authorities in the event of product spillage to water courses or sewage systems.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up
Remove with liquid-absorbing material (sand, peat, sawdust).

6.4 Reference to other sections

See Section 12 for additional Ecological Information

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling
Ensure that workrooms are adequately ventilated.
Avoid spraying/aerosol generation.
Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapors

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions
When storing in tanks above 60 °C, cover with a layer of nitrogen-protective gas.
Do not store together with reductants.
Do not store together with oxidants.
Keep away from heat
Protect from direct sunlight
Keep only in the original container in a cool, well-ventilated place

7.3 Specific end use(s)
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit value

<table>
<thead>
<tr>
<th>Component</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butanol with PO</td>
<td>NAV</td>
<td>NAV</td>
<td>NAV</td>
<td>NAV</td>
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</table>

Biological limit values

<table>
<thead>
<tr>
<th>Component</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>Spain</th>
<th>Germany</th>
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<tbody>
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<td>NAV</td>
<td>NAV</td>
<td>NAV</td>
<td>NAV</td>
</tr>
</tbody>
</table>

Legend

NAV - Not available

8.2 Exposure controls

**Personal Protective Equipment**

**Eye/face Protection**

Tight sealing safety goggles.

**Hand Protection**

PVC or Nitrile.

**Skin and body protection**

Wear suitable protective clothing.

**Respiratory protection**

When processing in open systems with aerosol formation wear suitable respiratory protection to avoid inhalation of aerosol particles.

**Other personal protection data**

Eyewash fountains and safety showers must be easily accessible.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>clear</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>little intrinsic odor</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>
pH No information available No information available
Melting / freezing point No information available No information available
Boiling point / boiling range No information available No information available
Flash point > 210.0 °C / > 410.0 °F ASTM D 92-97
Evaporation rate No information available No information available
Flammability (solid, gas) No information available No information available
Flammability Limit in Air
Upper flammability limit No information available No information available
Lower flammability limit No information available No information available
Vapor pressure No information available No information available
Vapor density No information available No information available
Specific gravity No information available No information available
Solubility (water) insoluble No information available
Solubility in other solvents No information available No information available
Partition coefficient: n-octanol/water No information available No information available
Autoignition temperature No information available No information available
Decomposition temperature No information available No information available
Kinematic viscosity 100.00 mm²/s @ 40 °C ASTM D 445-97
Dynamic viscosity No information available No information available
Density 0.993 g/cm³ @ 20 °C ASTM D 1298-99

9.2 Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Notes</th>
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</thead>
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<td>Bulk Density</td>
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<tr>
<td>Explosive properties</td>
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<tr>
<td>Oxidizing properties</td>
<td>The substance or mixture is not classified as oxidizing.</td>
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</tr>
<tr>
<td>Softening point</td>
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</tr>
<tr>
<td>Molecular weight</td>
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<tr>
<td>Volatile organic compounds (VOCs) content</td>
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<td></td>
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<tr>
<td>Percent Volatile, wt.%</td>
<td>Not a VOC</td>
<td></td>
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</table>

10. STABILITY AND REACTIVITY

10.1 Reactivity

Reactivity
No information available.

10.2 Chemical stability

Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Conditions to avoid
None.

10.5 Incompatible materials

Materials to avoid
Reaction with strong acids. Reaction with oxidants.

10.6 Hazardous decomposition products

Hazardous decomposition products
Can decompose slowly with localized heating above 150°C.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute health hazard

Eye contact
This product is not considered to be an eye irritant.

Skin contact
This product is not considered to be a skin irritant.

Ingestion
May be harmful if swallowed.

Inhalation
None known.

Acute toxicity

Oral LD50  > 2000 mg/kg (analogy)
Dermal LD50  No information available
Inhalation LC50  No information available

Skin corrosion/irritation
not irritating (analogy)

Serious eye damage/eye irritation
not irritating (analogy)

Sensitization
No information available

Germ cell mutagenicity
No information available

Carcinogenicity
No information available

Reproductive toxicity
No information available
12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute aquatic toxicity
- Fish: LC50 > 100 mg/l (analogy)
- Crustacea: No information available
- Bacteria toxicity: EC0 > 100 mg/L. (analogy)
- Algae/aquatic plants: No information available

12.2 Persistence and degradability

Persistence and degradability: No information available
Ultimate biodegradation: Not readily biodegradable.

12.3 Bioaccumulative potential

Bioaccumulative potential: No information available

12.4 Mobility in soil

Mobility: No information available.

12.5 Results of PBT and vPvB assessment

PBT and vPvB assessment: No information available

12.6 Other adverse effects

Other information: No other ecological studies have been carried out on this product.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of wastes: Dispose of according to regulations.
Contaminated packaging
Packaging that cannot be cleaned are to be disposed of in the same manner as the product. Disposal must be made according to official regulations.

14. TRANSPORT INFORMATION

US DOT  Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special precautions for user

Land transport (ADR/RID)  Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special precautions for user

Inland waterway transport (ADN)  Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special precautions for user

Air transport (ICAO-TI / IATA-DGR)  Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special precautions for user

Sea transport (IMDG)  Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special precautions for user

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. REGULATORY INFORMATION

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

International Inventories

Australia (AICS)
All ingredients are on the inventory or exempt from listing

Canada (DSL)
All ingredients are on the inventory or exempt from listing
Canada (NDSL)
None of the ingredients are on the inventory.

China (IECSC)
All ingredients are on the inventory or exempt from listing

EINECS (European Inventory of Existing Chemical Substances)
All ingredients are on the inventory or exempt from listing

ELINCS (European List of Notified Chemical Substances)
None of the ingredients are on the inventory.

ENCS (Japan)
All ingredients are on the inventory or exempt from listing

South Korea (KECL)
All ingredients are on the inventory or exempt from listing

Philippines (PICCS)
All ingredients are on the inventory or exempt from listing

TSCA (United States)
All ingredients are on the inventory or exempt from listing

Legend
AICS - Australian Inventory of Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
IECSC - China Inventory of Existing Chemical Substances
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCs - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

15.2 Chemical Safety Report
A Chemical Safety Assessment is not required for this substance.

<table>
<thead>
<tr>
<th>16. OTHER INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product code</strong></td>
</tr>
<tr>
<td><strong>Revision date</strong></td>
</tr>
</tbody>
</table>

Full text of H-Statements referred to under sections 2 and 3
None

Key or legend to abbreviations and acronyms used in the safety data sheet
NAV - Not available

This safety data sheet complies with the requirements of: Regulation (EC) No. 1907/2006.

Additional information
GEOlube® is a registered trademark of GEO Specialty Chemicals, Inc.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.